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United States  
Department of  
Agriculture

Forest Service

Tongass  
National  
Forest  
R10-MB-604

July 2007



# Kuiu Timber Sale Area

## Final Environmental Impact Statement

U.S.D.A., NAL

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CATALOGING PREP



## Abbreviations and Common Acronyms

<b>ANILCA</b>	Alaska National Interest Lands Conservation Act
<b>ASQ</b>	Allowable Sale Quantity
<b>BMPs</b>	Best Management Practices
<b>CCF</b>	Hundred Cubic Feet
<b>CEQ</b>	Council on Environmental Quality
<b>DBH</b>	Diameter at Breast Height
<b>DEIS</b>	Draft Environmental Impact Statement
<b>EFH</b>	Essential Fish Habitat
<b>FEIS</b>	Final Environmental Impact Statement
<b>Forest Plan</b>	Tongass Land and Resource Management Plan, 1997, as amended
<b>GIS</b>	Geographic Information System
<b>HSI</b>	Habitat Suitability Index
<b>IDT</b>	Interdisciplinary Team
<b>LTF</b>	Log Transfer Facility
<b>LUD</b>	Land Use Designation
<b>MBF</b>	Thousand Board Feet
<b>MIS</b>	Management Indicator Species
<b>MMBF</b>	Million Board Feet
<b>MMI</b>	Mass Movement Index
<b>NEAT</b>	NEPA Economic Analysis Tool
<b>NEPA</b>	National Environmental Policy Act
<b>NFMA</b>	National Forest Management Act
<b>NIC</b>	Non-interchangeable Component
<b>OGR</b>	Old-growth Habitat Reserve
<b>RMA</b>	Riparian Management Area
<b>RMO</b>	Road Management Objective
<b>ROS</b>	Recreation Opportunity Spectrum
<b>SEIS</b>	Supplemental Environmental Impact Statement
<b>TTRA</b>	Tongass Timber Reform Act
<b>VCU</b>	Value Comparison Unit
<b>VQO</b>	Visual Quality Objective
<b>WAA</b>	Wildlife Analysis Area



File Code: 2410

Date: July 16, 2007

Dear Reader,

Enclosed is your copy of the Final Environmental Impact Statement (FEIS) for the Kuiu Timber Sale Area. This FEIS is being released at this time without an accompanying Record of Decision (ROD) in view of the settlement agreement between the parties in the Natural Resources Defense Council v. U.S. Forest Service; Southeast Alaska Conservation Council v. U.S. Forest Service; and Organized Village of Kake v. U.S. Forest Service. This settlement was filed in the U.S. District Court on May 18, 2007. In it, the Forest Service agreed to postpone any decision for timber sales on Kuiu Island until at least 30 days after publication in the Federal Register of the Notice of Availability of the Final Environmental Impact Statement for the Tongass Forest Plan review process. The amended Forest Plan, FEIS and ROD are scheduled for release sometime in September, 2007.

The Tongass Forest Plan Amendment was begun after the Kuiu Project was initiated, and the current revised Forest Plan (1997) allows for the activities in the Kuiu Project Area to take place. Depending on the outcome of the current Amendment Record of Decision, a decision on the Kuiu Project may or may not be applicable, as the Land Use Designations (LUDs) of the area may be changed. LUDs identify what can and can not take place relative to various management activities across the Tongass National Forest.

The FEIS will be reviewed for consistency with the new Forest Plan Amendment decision. Any portions of this project will be adjusted as necessary to comply with the management direction in that decision.

In response to concerns and corrections noted in both public comments to the Draft Environmental Impact Statement (DEIS) and internal reviews, the FEIS reflects several changes from the DEIS. Note that one alternative in the Kuiu Timber Sale Area FEIS does not directly affect any inventoried roadless areas. The complete list of changes may be found in Chapter 2 of the FEIS. Noteworthy changes include:

- Reclassification of 6.5 miles of temporary road construction to new National Forest System (NFS) roads
- Decrease in the maximum total miles of new road construction, from 19 miles maximum to 10.4 miles maximum
- Reduced acreage under consideration due to resource concerns, resulting in revised timber volume estimates



- Updated timber sale economics analysis, using a different economic model and revised parameters

A Notice of Availability will be published in the Federal Register for the Kuiu Timber Sale Area FEIS, initiating the 30-day notice period as required in CFR 1506.10 (b). Again, a ROD for this project will not be issued until at least 30 days after the publication of the Notice of Availability in the Federal Register for the Tongass Forest Plan Amendment FEIS and decision.

If you would like further information or additional copies of the FEIS, please contact Tiffany Benna, District NEPA Coordinator at (907) 772-3871.

Sincerely,

*for*   
FORRESTER COLE  
Forest Supervisor

# **Kuiu Timber Sale Area**

## **Final Environmental Impact Statement**

### **Tongass National Forest USDA Forest Service Alaska Region**

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Abstract:            The Tongass National Forest proposes to harvest timber and build associated temporary roads in the Kuiu Timber Sale Area on Kuiu Island. This EIS examines one no-action alternative and four action alternatives with a range of harvest levels from approximately 9.6 to 33.3 million board feet (mmbf) of timber. Alternatives consider both clearcut harvest and partial harvest methods. One alternative includes some helicopter yarding. All alternatives include the choice of two log transfer facilities (LTF), one of which would require reconstruction. All action alternatives include reducing the number of miles of open road in the Project Area. Options for the location, size and habitat composition of three small old-growth habitat reserves are considered.





# Summary

## Background

The Forest Plan embodies the provisions of the National Forest Management Act (NFMA), its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest, and this EIS tiers to the 1997 Forest Plan and 1993 Forest Plan SEIS.

The process of remedying the shortcomings identified by the Ninth Circuit Court of Appeals is in progress with a Forest Plan Amendment DEIS released in January 2007. The current revised Forest Plan allows for the activities in the Kuiu Project Area to take place. Delaying planning and analysis regarding road building and timber harvest, even for a short time period, have a significant effect on the amount of timber available for sale in the next year, due to the time needed for sale preparation, appraisal and advertisement and to account for the time period when sale areas are typically inaccessible (winter months). Delayed project analyses affect other projects “in line” for consideration, creating impacts to the entire sale program several years into the future. Delayed project analyses also diminish the Forest Service’s ability to respond to the on-going timber demand since the analyses are time-consuming. The Kuiu project includes consideration of an alternative that does not directly affect roadless areas. The Kuiu FEIS will be reviewed for consistency with the Forest Plan Amendment decision following the procedures in the Forest Service Handbook FSH 1909.15 Section 18. Any portions of this project will be adjusted as necessary to be consistent with the management direction in the Forest Plan Amendment decision.

## Project Area

The Kuiu Timber Sale Area (Project Area) is located on north Kuiu Island, on the Petersburg Ranger District, Tongass National Forest, Alaska Region (Region 10) of the Forest Service, an agency of the U.S. Department of Agriculture (see Vicinity Map, Figure 1-1).

## Proposed Action

The Proposed Action for the Project Area (Alternative 4) is for the sale and harvest of approximately 33.3 million board feet (mmbf) of

sawlog and utility volume from 1,387 acres of National Forest System land. This harvest would require about 3.9 miles of temporary road construction, and 6.5 miles of NFS road construction. The logs would be hauled by truck to existing log transfer facilities (LTFs) at Rowan Bay or Saginaw Bay for shipment. Timber from this project would be offered through the Tongass National Forest timber sale program.

The Proposed Action includes adjusting the boundary of three small old-growth habitat reserves (OGRs) in or adjacent to the Project Area to meet Forest Plan criteria. The proposed adjustments would result in changes to the size of the OGRs (see Chapter 3, Wildlife). Any proposed OGR adjustments would require a non-significant amendment to the Forest Plan.

## Decisions to be Made

Based on the environmental analysis in this EIS, the Forest Supervisor will decide whether and how to implement activities within the Project Area in accordance with Forest Plan goals, objectives, and desired conditions. The decision may include:

- The location, design, scheduling, amount, and method of timber harvest, NFS and temporary road construction and closure, LTFs, and silvicultural practices,
- Any necessary project-specific mitigation measures and monitoring requirements,
- A determination of whether there may be a significant possibility of a significant restriction on subsistence uses, and
- Whether any changes in the small OGRs in VCU 398, 399, or 402 should be made and approved as a non-significant amendment to the Forest Plan.

## Purpose and Need

The project would achieve goals and objectives described in the Forest Plan, and help realize desired conditions described in that plan. Forest-wide goals and objectives (Forest Plan, pp. 2-3 and 2-4) that this proposed action would achieve include the following:

- Provide for a vigorous and healthy forest environment, including management of the timber resource for production of saw timber and other wood products from suitable lands made available for timber harvest on an even-flow, long-term sustained yield basis, and in an economically efficient manner,



- Ensure that the small OGR system criteria meets the minimum size, spacing, and composition,
- Provide diverse opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska, supporting a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

## Public Involvement

The following is a summary of the public involvement activities for the Kuiu Timber Sale.

- The project has been included in the Tongass National Forest Timber Sale Plan since 2004 and was first placed on the Spring 2004 Schedule of Proposed Actions (SOPA).
- Comments made during the 2005 Kuiu Landscape Assessment scoping and open house events were considered.
- Public scoping began in February 2004.
- Open houses that included information about the Kuiu Timber Sale were held in Petersburg in March 2004, December 2004, and June 2005. Open houses were held in Kake in June and November of 2004.
- A Notice of Intent to Prepare an Environmental Impact Statement was published in the *Federal Register* on August 9, 2004. On September 14, 2004, a revised Notice of Intent was published.
- A subsistence hearing for the Kuiu Timber Sale Area was held in Petersburg, Alaska on March 16, 2006 at the Petersburg City Council Chambers. Another subsistence hearing was held in Kake, Alaska at the Organized Village of Kake office on March 21, 2006.

## Changes Made Between the Draft EIS and the Final EIS

- Reclassified up to 6.5 miles of temporary road construction as new National Forest System (NFS) roads based on a re-evaluation of the Project Area's long-term management needs.
- Due to a calculation error in the DEIS, total miles of new NFS and temporary road construction decreased from a maximum of 19 miles to a maximum of 10.4 miles in the FEIS.
- Due to soil stability analyses, unit boundaries were revised in Units 101, 207, 303 and 305 to avoid unstable slopes.

- Acres were dropped in Units 204 and 208b to form a buffer between these two units to ensure no opening would exceed 100 acres.
- Issue 2 was refined to be more responsive to public comments.
- Timber volume estimates were revised based on reduced acreage.
- The timber sale economics analysis was updated due to 1) the use of NEAT\_R (Version 2.10) which uses the residual value appraisal method and 2) the allowance of interstate shipping.
- In response to the allowance of interstate shipping, helicopter economic mitigations that left all trees less than 16 inches diameter at breast height (DBH) and western hemlock greater than 36 inches DBH were dropped.
- In accordance with the settlement agreement between NRDC vs US Forest Service, the Crane and Rowan Mountain Timber Sales ROD was withdrawn. This withdrawal occurred after the analysis for the FEIS was complete; therefore, where appropriate, the unharvested Crane and Rowan units are included as reasonably foreseeable activities in the cumulative analyses.
- Additional information was added, where appropriate, as requested through comments on the Draft EIS.

## Significant Issues

Significant issues are used to formulate and design alternatives, prescribe mitigation measures, and analyze significant effects. Significant issues for the Kuiu Timber Sale have been identified through public and internal scoping. Similar issues are combined where appropriate.

The Forest Supervisor determined four significant issues within the scope of the Kuiu Timber Sale decision. These issues are addressed through the proposed action and the alternatives and are as follows:

- Issue 1- Inventoried Roadless Areas,
- Issue 2-Deer Habitat and Subsistence Use,
- Issue 3-Timber Harvest Economics, and
- Issue 4-Cumulative Watershed Effects.

Issue 1 relates to timber harvest and the related construction of new roads to facilitate timber harvest in roadless areas or in the smaller unroaded areas (Figure 3-1).

Issue 2 relates to cumulative effects on deer habitat and connectivity from past, present, and proposed activities, and the resulting effects on subsistence uses.

Issue 3 relates to the economic viability of the proposed timber sale or sales. It also relates to the potential employment and the revenue generated for communities in the area. If proposed timber harvest alternatives are not designed to be economically viable across fluctuating market conditions, there is concern that the forest products industry in Southeast Alaska cannot remain viable.

Watersheds within the Project Area have high value for fisheries. Two of the watersheds within the Project Area exceed 20 percent cumulative harvest within the last 30 years.

## Small OGRs

The small OGRs mapped in the Forest Plan FEIS have been evaluated for size, spacing, and habitat composition. An interagency review by biologists from the USDA Forest Service, Alaska Department of Fish and Game (ADF&G), and the U.S. Fish and Wildlife Service (USFWS) determined that alternative small OGRs within VCUs 398, 399, and 402 would better meet the requirements for size, connectivity, and acres of productive old-growth habitat. The review team recommended that the boundaries of the existing small OGRs be adjusted. All action alternatives would require a non-significant Forest Plan Amendment to adopt these recommendations.

The modified interagency OGR for VCU 398 would be approximately 2,305 acres, compared to 2,237 acres identified in the Forest Plan.

The modified interagency OGR for VCU 399 would be approximately 4,159 acres, compared to 2,628 acres identified in the Forest Plan.

The modified interagency OGR for VCU 402 would be approximately 5,273 acres, compared to 4,044 acres identified in the Forest Plan.

## Alternatives Considered in Detail

The No-Action (Alternative 1), Proposed Action (Alternative 4) and three other action alternatives were considered in detail. Figures 2-1 through 2-5 display the five alternatives. Tables 2-1 and 2-2 compare the proposed activities and effects of the alternatives.

### Alternative 1

Alternative 1 proposes no timber harvest, road construction, changes to road management objectives, changes to small Old-growth Reserves (OGRs), or other activities within the Project Area at this time. It represents the existing condition of the Project Area, and does not preclude future timber harvest or other activities from this area.

## Alternative 2

Alternative 2 was developed to minimize impacts to wildlife and watersheds, and to have no direct effects to inventoried roadless areas or unroaded areas. The proposed timber harvest would result in the production of approximately 9.6 million board feet (mmbf) of timber from approximately 477 acres. Only ground-based logging systems would be used. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally feasible. Harvest units in the Recreational River Land Use Designation (LUD) would retain 50 percent of the stand basal area to maintain scenic values. Logs would be transported to an existing Logging Transfer Facility (LTF) in either Saginaw Bay or Rowan Bay.

Approximately 1.8 miles of NFS road and 1.5 miles of temporary road construction would be necessary for timber harvest. Road construction would not cross any Class I or II fish streams in this alternative. Additionally, approximately 4.1 miles of roads currently closed (Roads 6417, 6443, 46091, and 46094) would be opened and reconditioned to access timber. This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require placement of one crossing structure on a Class III stream, and five crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, approximately 7.8 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic and placed in storage (Roads 6413, 46021, and 46096).

Included in Alternative 2, the boundaries of three small OGRs (in VCU 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## Alternative 3

Alternative 3 was developed by modifying Alternatives 2 and 4 to reduce impacts to resources such as wildlife, hydrology, and fisheries while providing a larger economic return. The proposed timber harvest would result in the production of approximately 15.9 mmbf of timber from approximately 786 acres. Only ground-based logging systems would be used. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally



feasible. Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 5.4 miles of NFS road and 2.1 miles of temporary road construction would be necessary for timber harvest. One bridge would be placed across a Class II fish stream on NFS Road 46030 to reduce potential impacts to fish. About 3.0 miles of roads currently in storage would be reconditioned to access timber (Roads 6417, 46091, and 46094). The opening of these roads would require the installation of two crossing structures on Class I streams and three crossing structures on Class II streams. Road construction and reconditioning would require placement of eight crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reopened NFS roads would be closed and all temporary roads would be decommissioned. In addition, approximately 8 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, and 46096).

Included in Alternative 3, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## **Alternative 4 Proposed Action**

The Proposed Action for the Kuiu Timber Sale would result in the production of approximately 33.3 mmbf of timber from approximately 1,387 acres. A mix of ground-based and helicopter logging systems would be used. Helicopter logging would be used to access units on steeper ground. Helicopter use reduces the need for road construction and allows a more selective harvest on steeper slopes. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally feasible. Harvested units in the Recreational River LUD would retain 50 percent of the stand's basal area for scenic values. Where helicopter logging is specified, 50 percent of the stand basal area would be left to improve economics. Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 6.5 miles of NFS road and 3.9 miles of temporary road construction would be necessary for timber harvest. Road construction would require the installation of two crossing structures across Class II fish streams. Additionally, 6.1 miles of roads currently closed would be reconditioned to access timber (Roads 6417, 6422, 6443, 46091, and a portion of 6427). This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require

placement of 14 crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, after timber harvest is complete, 10.5 miles of roads that are currently open and would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, 46021, 46096, and a portion of 6427).

Included in Alternative 4, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

### **Alternative 5**

Alternative 5 proposes even-aged management with clearcut harvesting of timber to increase the economic return. The proposed timber harvest would result in the production of approximately 31.4 mmbf of timber from approximately 1,208 acres. Only ground-based logging systems would be used. Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 6.5 miles of NFS road and 3.5 miles of temporary road construction would be necessary for timber harvest. Road construction would require the installation of two crossing structures across Class II fish streams. Additionally, 6.1 miles of roads currently closed would be reconditioned to access timber (Roads 6417, 6422, 6443, 46091, 46094, and a portion of 6427). This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require placement of 15 crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, after timber harvest is complete, 10.5 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, 46021, 46096, and a portion of 6427).

Included in Alternative 5, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## **Design Criteria Common to All Action Alternatives**

All alternatives, including the Proposed Action, are consistent with the Tongass Land and Resource Management Plan. All applicable Forest

Plan Standards and Guidelines have been incorporated into the design of the proposed units and alternatives. Additional direction comes from applicable laws and Forest Service Manuals and Handbooks. Site-specific descriptions and resource considerations for each potential harvest unit are included as Unit Cards in Appendix B. These Unit Cards serve as the prescription or design narrative for the project. Design elements for NFS roads are also described in detail in Appendix B.

Table S-1. Proposed activities by alternative for the Kuiu Timber Sale Area

Proposed Activity		Alternative				
		1	2	3	4	5
<b>Acres of Timber Harvested by Treatment</b>						
<b>Even-aged Management</b>	Clearcut	0	197	409	1,025	1,208
<b>Uneven-aged Management</b>	Single tree selection - 50% basal area retention	0	87	72	193	0
	Group selection - 50% basal area retention	0	19	19	41	0
<b>Two-aged Management</b>	Clearcut with reserves - 50% area retention	0	175	286	128	0
<b>Total Acres</b>		<b>0</b>	<b>478</b>	<b>786</b>	<b>1,387</b>	<b>1,208</b>
<b>Acres of timber harvest by logging system</b>						
Cable		0	395	751	1,092	1,059
Shovel		0	83	35	147	149
Helicopter		0	0	0	148	0
<b>Miles of road maintenance/reconditioning/construction</b>						
Maintenance: miles of open NFS roads after harvest		56.2	48.0	47.8	45.2	45.2
Reconditioned: existing NFS roads (closed after harvest)		0	4.1	3.0	6.1	6.8
New Construction: NFS road (closed after harvest)		0	1.8	5.4	6.5	6.5
New Construction: temporary roads (decommissioned after harvest)		0	1.5	2.1	3.9	3.5
<b>Miles of road closure</b>						
NFS Roads (Maintenance Level 2 or above)		0	7.8	8.0	10.5	10.5



Table S-2. Comparison of alternatives by issue and effects

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Issue 1 – Roadless Areas</b>					
Acres harvested within Inventoried Roadless Area (IRA)	0	0	67	207	114
Miles of NFS roads constructed within IRA	0	0	0.06	0.33	0.33
Miles of temporary roads constructed within IRA	0	0	0.12	0.13	0.13
Percent of affected IRA including zones of influence (600' for harvest, 1,200' for roads)	0	0	3%	6%	4%
Change in IRA roadless characteristics?	No	No	No	No	No
IRA still eligible for Wilderness designation?	Yes	Yes	Yes	Yes	Yes
Acres harvested within unroaded areas	0	0	68	167	167
Miles of NFS roads constructed in unroaded areas	0	0	0.55	0.55	0.55
Miles of temporary roads constructed within unroaded areas	0	0	0.09	0.3	0.3
<b>Issue 2 – Deer Habitat and Subsistence Use</b>					
Acres of POG maintained within the WAA	90,586	90,379	89,800	89,199	89,648
Acres of important deer winter range (HSI = 0.60 – 1.0) remaining after harvest in WAA 5012	21,971	21,843	21,841	21,660	21,725
Subsistence	Implementations of any action alternative for this project, in combination with past and reasonably foreseeable future timber harvest, will not likely result in a significant restriction on subsistence use of resources. However the Forest Plan predicts that by completing the harvest schedules at the end of the rotation (2095) there may be possible future restrictions for subsistence hunting for deer.				

# FEIS Summary

Table S-2. Comparison of alternatives by issue and effects (continued)

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Issue 3 – Timber Harvest Economics</b>					
Amount of volume (mbf)	0	9,617	15,859	33,300	31,354
Indicated bid (\$/mbf) to Rowan Bay LTF	0	(\$157.99)	(\$179.99)	(\$155.11)	(\$141.28)
Indicated bid (\$/mbf) to Saginaw Bay LTF	0	(\$136.27)	(\$158.94)	(\$136.71)	(126.92)
Total Logging Costs per mbf (including road costs) to Rowan Bay LTF	0	\$397.10	\$417.05	\$393.10	\$378.35
Total Logging Costs per mbf (including road costs) to Saginaw Bay LTF	0	\$375.38	\$396.00	\$374.70	\$361.28
Road costs per mbf (construction and reconstruction) to Rowan Bay LTF	0	\$59.94	\$79.52	\$49.28	\$54.09
Road costs per mbf (construction and reconstruction) to Saginaw Bay LTF	0	\$59.94	\$79.52	\$49.28	\$54.09
<b>Issue 4 – Cumulative Watershed Harvest Since 1977</b>					
Acres of extreme risk hazard (MMI-4) soils in units	0	0	0	14	18
Cumulative timber harvest acres - % of Dean Creek Watershed (WS)	24.0	24.0	24.0	26.7	26.7
Cumulative timber harvest acres - % of Saginaw Creek Watershed (WS)	8.2	9.4	12.4	13.3	12.2
Cumulative timber harvest acres - % of WS #109-45-10090	18.8	19.9	18.8	23.4	23.4
Cumulative timber harvest acres - % of WS #109-44-10370	8.3	10.8	10.6	10.8	10.8
Cumulative timber harvest acres - % of Security Creek	22.5	23.3	24.4	25.2	25.2
Cumulative timber harvest acres - % of Kadake Creek Watershed	17.3	17.7	17.8	18.2	17.9

Table S-2. Comparison of alternatives by issue and effects (continued)

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Other Environmental Considerations					
Effects on TES Species	Activities may impact individual goshawks but would not result in a trend toward listing. No effect for other species.				
Effects on Wildlife					
Project Area open road density (mi/mi <sup>2</sup> )	0.78	0.67	0.66	0.63	0.63
WAA 5012 open road density (mi/mi <sup>2</sup> )	0.46	0.42	0.42	0.41	0.41
Acres of high value marten habitat (HSI > 0.89) after harvest in WAA 5012	51,614	51,211	50,984	50,438	50,676
Acres of coarse canopy old-growth that would remain after harvest in the WAA	22,956	22,738	22,629	22,172	22,415
Acres low elevation / high value wildlife (POG below 800 feet) that would remain after harvest in the WAA	22,956	22,637	22,547	21,913	22,259
Effects on Water Quality					
Number of Class I stream crossings on closed roads and proposed temporary roads	0	3	2	3	3
Number of Class II stream crossings on closed roads and proposed temporary roads	0	3	4	5	5
Number of Class III stream crossings on closed roads and proposed temporary roads	0	1	8	14	15
Number of Class IV stream crossings on closed roads and proposed temporary roads	0	5	19	19	19
Miles of temporary road construction	0	1.5	2.1	3.9	3.5
Miles of currently open roads placed in storage (structures removed and roads waterbarred)	0	8.2	8.4	11.0	11.0
Effects on Recreation	None				
Effects on Scenery					
Acres harvested in Recreational River LUD	0	18	0	49	0
Effects on Heritage Resources	None				
Effects on Land Status	None				

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# **Chapter 1**

## **Purpose and Need**

# Chapter 1

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# Chapter 1

## Purpose and Need

### 1.1 Introduction

The Kuiu Timber Sale Area (Project Area) is located on north Kuiu Island, on the Petersburg Ranger District, Tongass National Forest, Alaska Region (Region 10) of the Forest Service, an agency of the U.S. Department of Agriculture (see Vicinity Map, Figure 1-1).

This chapter discusses the background of the Kuiu Timber Sale project and ties to the Tongass National Forest Land and Resource Management Plan (referred to as the Forest Plan in this document). It includes the steps taken to identify environmental issues and public concerns related to implementation of the project.

### 1.2 Proposed Action

A “proposed action” is defined early in the project-level planning process to briefly describe the project’s actions and magnitude. This serves as a starting point for the environmental analysis and gives the public and other agencies specific information to focus comments upon. Using these comments (see discussion of Significant Issues later in this chapter), and information from preliminary analysis, the interdisciplinary team develops alternatives to the proposed action. These are discussed in detail in Chapter 2.

The Proposed Action for the Project Area (Alternative 4) is for the sale and harvest of approximately 33.3 million board feet (mmbf) of sawlog and utility volume from 1,387 acres of National Forest System land. This harvest would require about 3.9 miles of temporary road construction, and 6.5 miles of NFS road construction. The logs would be hauled by truck to existing log transfer facilities (LTFs) at Rowan Bay or Saginaw Bay for shipment. Timber from this project would be offered through the Tongass National Forest timber sale program.

The Proposed Action includes adjusting the boundary of three small old-growth habitat reserves (OGRs) in or adjacent to the Project Area to meet Forest Plan criteria. The proposed adjustments would result in changes to the size of the OGRs (see Chapter 3, Wildlife). Any

# 1 Purpose and Need

proposed OGR adjustments would require a non-significant amendment to the Forest Plan.

## 1.3 Purpose and Need

The project would achieve goals and objectives described in the Forest Plan, and help realize desired conditions described in that plan. Forest-wide goals and objectives (Forest Plan, pp. 2-3 and 2-4) that this proposed action would achieve include the following:

- Provide for a vigorous and healthy forest environment, including management of the timber resource for production of saw timber and other wood products from suitable lands made available for timber harvest on an even-flow, long-term sustained yield basis, and in an economically efficient manner,
- Ensure that the small OGR system criteria meets the minimum size, spacing, and composition,
- Provide diverse opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska, supporting a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

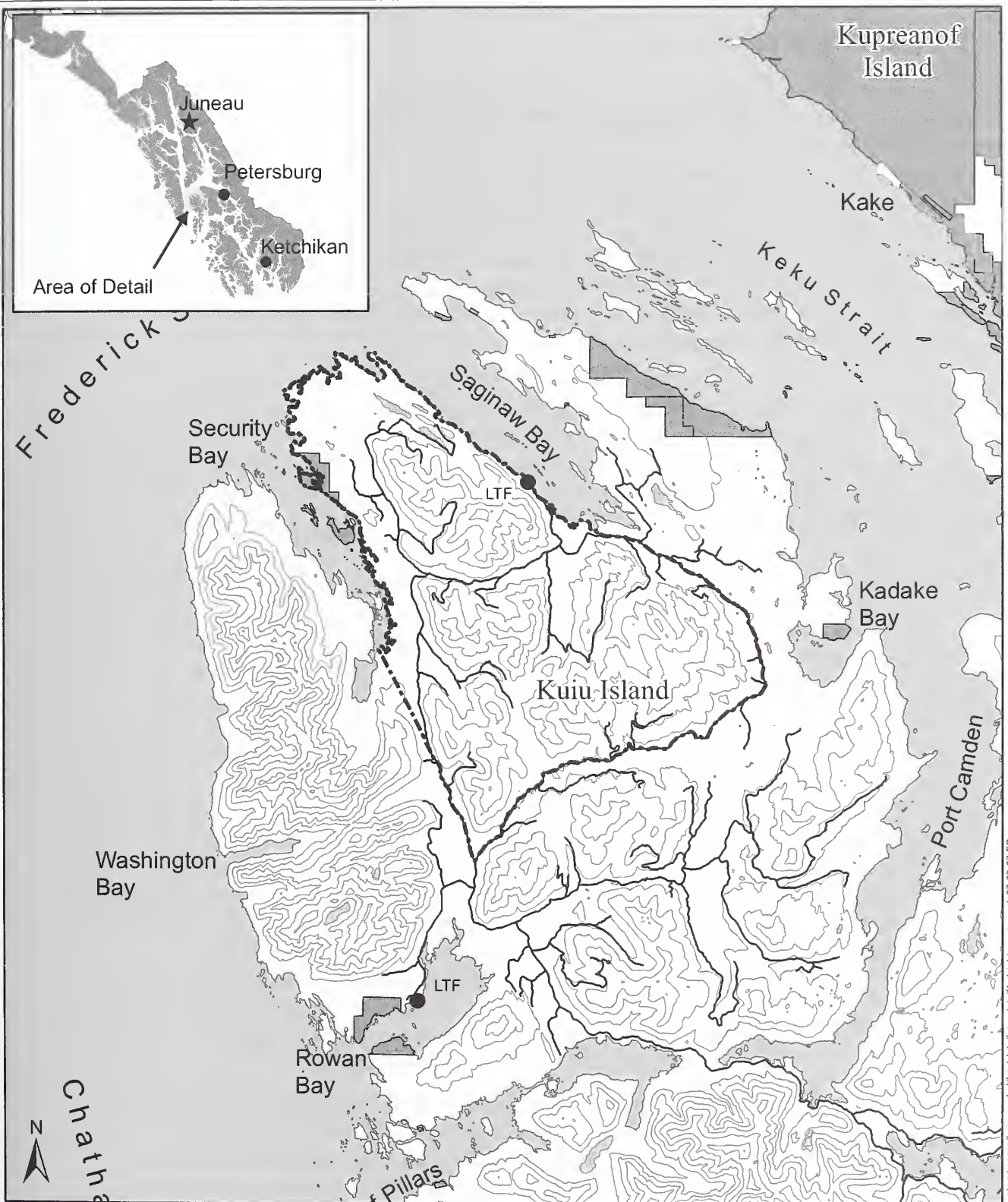
Appendix A provides information on how this project relates to the overall Tongass timber sale program, and why the project is being scheduled at this time.

## 1.4 Decisions to be Made

Based on the environmental analysis in this EIS, the Forest Supervisor will decide whether and how to implement activities within the Project Area in accordance with Forest Plan goals, objectives, and desired conditions. The decision may include:

- The location, design, scheduling, amount, and method of timber harvest, NFS and temporary road construction and closure, LTFs, and silvicultural practices,
- Any necessary project-specific mitigation measures and monitoring requirements,
- A determination of whether there may be a significant possibility of a significant restriction on subsistence uses, and
- Whether any changes in the small OGRs in VCUs 398, 399, or 402 should be made and approved as a non-significant amendment to the Forest Plan.





### Legend

- Non-National Forest
- Lakes/Salt Water
- 500ft Contour Interval
- Kuiu Project Area Boundary
- Existing Roads

**Figure 1-1**  
 Vicinity Map of Kuiu Timber Sale  
 Petersburg Ranger District  
 Tongass National Forest

0 2.5 5 Miles

# 1 Purpose and Need

## 1.5 Management Direction

The Kuiu Timber Sale EIS is a project-level analysis. The scope of the analysis is confined to the Project Area, and when appropriate, areas adjacent to the sale area. The analysis addresses the significant issues and environmental consequences of the proposed action and its alternatives. While it does not attempt to address decisions made at higher levels of planning, it does implement direction provided at those higher levels.

The Forest Plan embodies the provisions of the National Forest Management Act (NFMA), its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest, and this EIS tiers to the 1997 Forest Plan and 1993 Forest Plan SEIS.

The process of remedying the shortcomings identified by the Ninth Circuit Court of Appeals is in progress with a Forest Plan Amendment DEIS released in January 2007. The current revised Forest Plan allows for the activities in the Kuiu Project Area to take place. Delaying planning and analysis regarding road building and timber harvest, even for a short time period, have a significant effect on the amount of timber available for sale in the next year, due to the time needed for sale preparation, appraisal and advertisement and to account for the time period when sale areas are typically inaccessible (winter months). Delayed project analyses affect other projects “in line” for consideration, creating impacts to the entire sale program several years into the future. Delayed project analyses also diminish the Forest Service’s ability to respond to the on-going timber demand since the analyses are time-consuming. The Kuiu project includes consideration of an alternative that does not directly affect roadless areas. The Kuiu FEIS will be reviewed for consistency with the Forest Plan Amendment decision following the procedures in the Forest Service Handbook FSH 1909.15 Section 18. Any portions of this project will be adjusted as necessary to be consistent with the management direction in the Forest Plan Amendment decision.

### 1.5.1 Forest Plan Land Use Designations

The Forest Plan uses Land Use Designations (LUDs) to guide the management of the National Forest System lands on the Tongass National Forest. Chapter 3 of the Forest Plan contains a detailed description of each land use designation. The Project Area includes three of these LUDs – Timber Production, Recreational River, and Old-growth Habitat Reserve (Table 1-1). Goals, objectives and desired future conditions of each are summarized below. The locations of each LUD on Kuiu Island, including the Project Area, are shown on Figure 1-2. Less than one percent of the lands in the Project Area are non-National Forest system lands.



### 1.5.1.1 Timber Production LUD (42,905 acres)

Tongass-wide these lands are managed for the production of saw timber and other wood products on an even-flow, long-term sustained yield basis. The forested areas are healthy stands with a balanced mix of age classes. An extensive road system is developed for accessing timber and subsequently used for recreation, hunting, fishing, and other public and administrative uses. Roads may be closed, either seasonally or year-round, to address resource and other needs. Management activities will generally dominate most seen areas. A variety of wildlife habitats, predominately in the early and middle successional stages, is present.

The Timber Production LUD includes areas of beach and estuary fringe, riparian reserves, high-vulnerability karst, Riparian Management Areas (RMAs), non-forested areas, and non-productive forested areas totaling approximately 8,182 acres. These acres are considered unsuitable for timber production and were removed from the suitable<sup>1</sup> timber base by the Forest Plan. Prior to the signing of the Forest Plan Record of Decision, approximately 1,739 acres of what is now considered unsuitable land for timber production had been harvested. Most of this harvest took place in what are now recognized as riparian areas, beach fringe areas, and non-development LUDs. These acres are included in the total acres harvested discussion in the “Prior Management of the Area” section in this chapter and throughout the EIS.

Approximately 29,362 acres in the Timber Production LUD are considered suitable for timber production, and 8,654 of these acres have been previously harvested. Of the total acres harvested in the Project Area (approximately 1,739 from unsuitable lands and 8,654 from suitable lands), 4,766 acres have been pre-commercially thinned. The remaining 5,627 acres are too young and not large enough for commercial thinning. The second-growth that is on suitable land is not proposed for harvest at this time.

---

<sup>1</sup> Suitable Forest land - Forest land that is producing or is capable of producing crops of industrial wood and; 1) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; 2) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; 3) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within five years after final harvest, 4) adequate information is available to project responses to timber management activities, and 5) where timber harvest is allowed under the Forest Plan.

# 1 Purpose and Need

The remaining 20,708 acres of suitable timber in the Project Area includes land with productive old-growth<sup>1</sup> timber and is available for harvest at this time.

## **1.5.1.2 Recreational River LUD (1,246 acres)**

Recreational River segments are managed to maintain a free-flowing river resource, while providing for access and use consistent with the Wild and Scenic Rivers Act and the Alaska National Interest Lands Conservation Act (ANILCA). Timber harvest is permitted on suitable lands if adjacent lands are being managed for timber. These Recreational River lands would also be managed for recreation use and activities to meet the criteria for a number of social encounters, on-site developments, methods of access and visitor impacts. Roads are permitted to access, parallel or cross the river. Visual Quality Objectives (VQOs) would be applied within the corridor.

In the Project Area approximately 1,246 acres are in the Recreational River LUD. This LUD maintains the eligibility status of the Kadake River corridor for the Wild and Scenic River designation.

## **1.5.1.3 Old-growth Habitat LUD (1,595 acres)**

In the Project Area, there are approximately 1,595 acres in the Old-growth Habitat LUD. The LUD's objectives are to provide forest habitats to maintain viable populations of native and desired non-native fish and wildlife species that may be closely associated with old-growth forests. Other objectives are to contribute to the habitat capability of fish and wildlife resources in order to support sustainable human uses, and to maintain biological diversity components and ecological processes associated with old-growth forests.

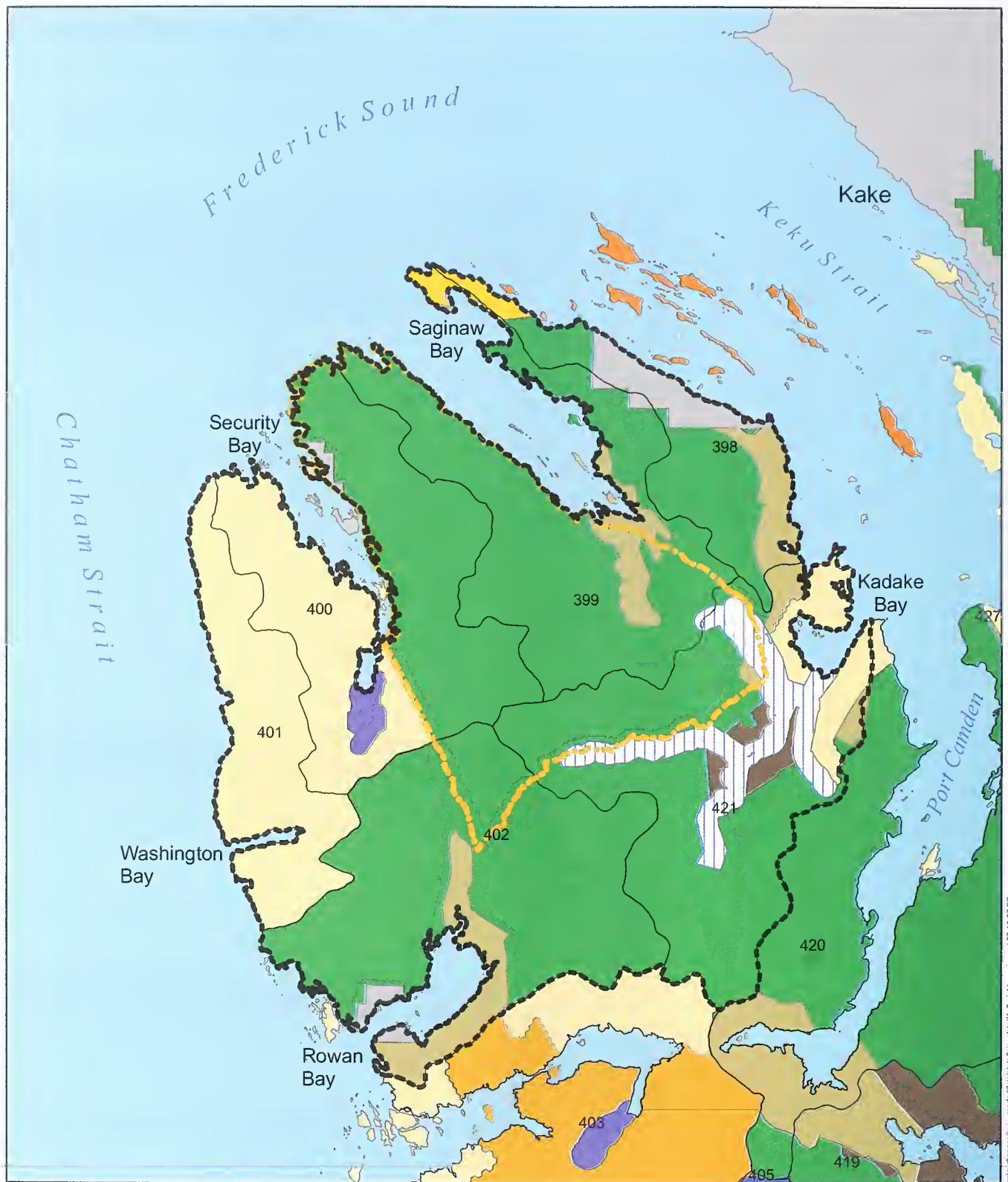
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<sup>1</sup> Productive Old-growth – old-growth stands capable of producing 20 cubic feet per acre per year with 8,000 or more board feet of timber per acre

**Table 1- 1. Forest Plan Land Use Designations on Kuiu Island**

Land Use Designation (acres)	Kuiu Island	Kuiu Project Area (acres)	% of project area in LUD
<b>Non-development LUDs</b>			
<b>Wilderness</b>	124,576	0	0
<b>Special Interest Area</b>	1,094	0	0
<b>Remote Recreation</b>	42,347	0	0
<b>Old-growth Habitat</b>	25,171	1,595	3%
<b>Semi-remote Recreation</b>	106,149	0	0
<b>Wild River</b>	1,807	0	0
<b>Recreational River</b>	6,585	1,246	3%
<b>Development LUDs</b>			
<b>Recreational River<sup>1</sup></b>	6,585	1,246	3%
<b>Modified Landscape</b>	29,444	0	0
<b>Timber Production</b>	141,141	42,905	93%
<b>Other</b>			
<b>Non-National Forest System Land</b>	3,787	356	<1%

<sup>1</sup>Recreation LUDs may be considered for development LUDs based on the adjacent lands.



### Legend

- |  |   |
|--|---|
| <span style="border-bottom: 2px dashed yellow; width: 50px; display: inline-block;"></span> Kuiu Project Area Boundary   | <span style="background-color: yellow; width: 20px; height: 10px; display: inline-block;"></span> Special Interest Area       |
| <span style="border-bottom: 2px dashed black; width: 50px; display: inline-block;"></span> WAA 5012 Boundary             | <span style="background-color: lightyellow; width: 20px; height: 10px; display: inline-block;"></span> Semi-Remote Recreation |
| <span style="background-color: brown; width: 20px; height: 10px; display: inline-block;"></span> Modified Landscape      | <span style="background-color: orange; width: 20px; height: 10px; display: inline-block;"></span> Scenic Viewshed             |
| <span style="background-color: grey; width: 20px; height: 10px; display: inline-block;"></span> Non-National Forest      | <span style="background-color: green; width: 20px; height: 10px; display: inline-block;"></span> Timber                       |
| <span style="background-color: tan; width: 20px; height: 10px; display: inline-block;"></span> Old-growth Reserve        | <span style="background-color: purple; width: 20px; height: 10px; display: inline-block;"></span> Wild River                  |
| <span style="background-color: lightyellow; width: 20px; height: 10px; display: inline-block;"></span> Remote Recreation | <span style="background-color: blue; width: 20px; height: 10px; display: inline-block;"></span> Wilderness                    |
| <span style="border: 1px solid black; width: 20px; height: 10px; display: inline-block;"></span> Recreation River        |   |

Figure 1-2

Land Use Designation Map of Kuiu Timber Sale  
Petersburg Ranger District  
Tongass National Forest

0 2.5 5 Miles



## 1.5.2 Non-National Forest System Lands

There are 356 acres of non-National Forest System lands within the Project Area: two acres of private land, seven acres of Bureau of Land Management land, and 347 acres of State of Alaska land. Although the Forest Service does not have authority over these non-national Forest Service lands, for purposes of this EIS they are considered when analyzing cumulative effects.

## 1.6 Description of the Project Area

### 1.6.1 Geographic Location and Boundaries

The Project Area is located on north Kuiu Island, on the Petersburg Ranger District of the Tongass National Forest in Southeast Alaska, Townships 57, 58, and 59 South, Ranges 71 and 72 East, Copper River Meridian. The Project Area includes lands within Value Comparison Units (VCUs) 399, 400, 402, and 421, an area approximately 46,102 acres (Figure 1-2). VCUs are comparable to large watersheds and generally follow major topographic divides. The Project Area is encompassed by National Forest System (NFS) Roads 6402 and 6415 and the peninsula between Security Bay and Saginaw Bay.

The Project Area is located approximately 12 air-miles southwest of the city of Kake, which is located on Kupreanof Island. Approximately 356 acres of non-national forest system lands are included in the Project Area. Access to the area is by boat or floatplane.

## 1.7 Public Involvement

Public involvement is a key component of the planning process. The Council on Environmental Quality (CEQ) defines scoping as “...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment at various stages of the environmental analysis process. Scoping begins early and is a process that continues until a decision is made. Comments received at other levels of the planning process, such as for the Forest Plan and the landscape level analysis, were also considered. The following paragraphs describe the public involvement activities that have occurred for the Project Area analysis.

The project has been included in the Tongass National Forest Timber Sale Plan since 2004 and was first placed on the Spring 2004 Schedule of Proposed Actions (SOPA). This schedule is updated quarterly and mailed to everyone who requests it, and is available at Ranger District



# 1 Purpose and Need

offices and on the Tongass National Forest website ([www.fs.fed.us/r10/tongass](http://www.fs.fed.us/r10/tongass)).

## 1.7.1 Kuiu Island Landscape Assessment Scoping

Comments made during the 2005 Kuiu Landscape Assessment scoping and open house events parallel the Forest Plan's desired condition for the Tongass. People want to see a healthy deer population maintained on the island in perpetuity to meet the needs of subsistence hunters. They are concerned about the fragmentation of old-growth habitat and supportive of the old-growth habitat conservation strategy.

Public comments support a sustainable timber harvest, although opinions differ on what level of harvest is acceptable. Public comments concerning recreation emphasize maintaining a wide spectrum of recreation opportunities, from developed to non-developed. Public comments strongly favor protection of water quality as it relates to fish and shellfish habitat because of the importance of aquatic species for subsistence and commercial uses. Public opinions regarding National Forest System roads vary widely, but most people agree that all open roads should be well maintained to minimize their environmental effects and to provide for the comfort and safety of users.

Nearby residents in Kake, Point Baker, and Port Protection emphasize the importance of considering traditional community values and customs when proposing management activities. They express a desire for balance between meeting the economic needs of a community and meeting the ecological needs of the landscape.

## 1.7.2 Project Area Scoping

### 1.7.2.1 Public Mailing

Public scoping began in February 2004. A newsletter identifying the Project Area and requesting information on site-specific concerns was mailed to approximately 270 people who: requested to be on project mailing lists, previously expressed interest in timber sale proposals, and either own property or conduct business near the Project Area. In addition, the newsletter was mailed to local, state, and federal agencies and federally recognized tribal governments.

The project mailing list is frequently updated to accommodate requests for additions, deletions, and address changes.

The Forest Service received 28 responses to this mailing. While some comments supported the proposed timber sale, most expressed concerns about additional road construction, uneconomic timber harvest, disturbance to wildlife, clearcutting as a harvest method, and the cumulative effects of additional harvest on previously harvested watersheds.

### 1.7.2.2 Open Houses

Open houses that included information about the Kuiu Timber Sale were held in Petersburg in March 2004, December 2004, and June 2005. Open houses were held in Kake in June and November of 2004. These open houses were advertised in the *Petersburg Pilot*, the local weekly newspaper in Petersburg, and on KFSK Public Radio in Petersburg. Flyers were posted on bulletin boards throughout Petersburg. In Kake, flyers were sent to the City Council for posting prior to the meetings. There is no local paper or radio station in Kake.

### 1.7.3 Notice of Intent

A Notice of Intent to Prepare an Environmental Impact Statement was published in the *Federal Register* on August 9, 2004. On September 14, 2004, a revised Notice of Intent was published. This Notice briefly described the proposed action and the purpose and need for the project. Estimated timelines for the project were given, along with the project background summary and contact information for those interested in participating in the planning process.

## 1.8 Consultation

### 1.8.1 Consultation with Other Government Agencies

The Forest Service is committed to working closely with other agencies at all stages of planning. The agency is responsible for coordinating reviews of the project by several other agencies. In some cases, the reviews are required because another agency has authority to issue permits for certain proposed activities. In other cases, the reviews allow interaction with other agencies with responsibilities for certain environmental conditions, like clean water or healthy wildlife populations. This interagency cooperation helps identify the means to avoid or mitigate possible harmful environmental effects. In many cases, an ongoing professional dialogue is maintained with these agencies throughout the planning process.

The following agencies have been consulted about this project:

- Alaska Department of Fish and Game
- Alaska Department of Environmental Conservation
- Alaska Office of History and Archaeology
- Alaska Department of Natural Resources
- U.S. Environmental Protection Agency
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

# 1 Purpose and Need

In 1998, in a collaborative process, a Forest Service wildlife biologist worked with biologists from the U.S. Fish and Wildlife Service (USFWS), the Alaska Department of Fish and Game (ADF&G), and the Alaska Department of Environmental Conservation (DEC) to develop a biologists' recommended design for placement of the small old-growth habitat reserves for all of Kuiu Island. In June 2004, representatives from ADF&G, USFWS, and DEC met with the Kuiu Interdisciplinary Team (IDT) to further discuss options for reconfiguring the small OGRs in northern Kuiu Island, including those in or near the Project Area. The following day, the IDT coordinated an interagency field trip to the Project Area with representatives of ADF&G, USFWS, and DEC. There was agreement to submit the proposed small OGR recommendations for VCUs 398, 399, and 402 for analysis in this document.

## 1.8.2 Consultation with Federally Recognized Tribal Governments

Consultation with federally recognized tribal governments included government-to-government and staff level communications. On November 22, 2004, several members of the Kuiu Timber Sale planning team accompanied Patricia Grantham, Petersburg District Ranger, to Kake. They met with Henrich Kadake, Sr., Organized Village of Kake (OVK) President, and other OVK members, where the Kuiu Timber Sale was discussed. The Kuiu Timber Sale Heritage Resources report was given to the OVK council for review and comment. The Forest Service also sent letters of consultation and copies of our heritage resource report to the Petersburg Indian Association, Sealaska Corporation, and Tlingit/Haida Central Council.

## 1.8.3 Availability of Draft EIS and Comments to DEIS

After the Draft EIS was made available to the public, the Environmental Protection Agency published the Notice of Availability of the Draft EIS in the Federal Register on February 2, 2006. Notices were also published in the Juneau Empire, the official newspaper of record, and in the Petersburg Pilot. The 45-day public comment period for the Draft EIS ended on March 20, 2006. Eighteen individual comment letters were received during the comment period, and are included in Appendix D. We also received two electronic form letters from two special interest groups, the Wilderness Society (WS) and the Natural Resource Defense Council (NRDC). The WS form letter was received from approximately 12,000 individuals and the NRDC was received from approximately 64,000 individuals. Responses to these form letters are included in Appendix D. Key issues from the DEIS comments include: water quality and fish habitat; timber economics; Forest Plan and legislation regarding NRDC vs U.S. Forest Service; effects on deer populations and subsistence users; and soil stability and the risk of landslides.

## 1.8.4 Comments Received During Subsistence Hearings

In accordance with Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), a subsistence hearing for the Kuiu Timber Sale Area was held in Petersburg, Alaska on March 16, 2006 at the Petersburg City Council Chambers. The date, time, and location of the subsistence hearing were publicized in the local media. Three people testified at the hearing. Their general concerns focused on the cumulative effects the proposed project would have on wildlife, subsistence and watersheds.

Another subsistence hearing was held in Kake, Alaska at the Organized Village of Kake office on March 21, 2006. This hearing was delayed about a week due to weather conditions. The date, time, and location of this hearing were publicized in the local media and with flyers posted throughout town. One person testified at this hearing. The testifier's concerns were about the negative effects the project could have on subsistence use by Kake residents (specifically on fish and waterfowl). He was also concerned about increased road use by hunters and declining bear populations.

## 1.8.5 Availability of the Final EIS

The Kuiu Timber Sale Area Final EIS Notice of Availability will be published in the Federal Register. A public notice will also appear in the Juneau Empire, the official newspaper of record, and the Petersburg Pilot.

## 1.8.6 Availability of the Planning Record

The planning record for this project includes the Draft EIS, Final EIS, material incorporated by reference, and all materials produced during the environmental analysis of this project. The planning record is available for public review at the Petersburg Ranger District in Petersburg, Alaska during normal business hours.

## 1.9 Significant Issues

Significant issues are used to formulate and design alternatives, prescribe mitigation measures, and analyze significant effects. Significant issues for the Kuiu Timber Sale have been identified through public and internal scoping. Similar issues are combined where appropriate. Issues can arise from a variety of sources, including:

- Issues, concerns, and opportunities identified in the Forest Plan,
- Issues identified for similar projects (past actions),
- Current internal issues,
- Changes in public uses, attitudes, values, or perceptions,
- Issues raised by the public during scoping, and
- Comments from other government agencies.



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Measures of the significance of an issue are based on the extent of the geographic distribution, the duration of the related effects, or the intensity of interest or resource conflict surrounding the issue. For an issue to be considered significant at the project level, it must be relevant to the specific project so that it can be appropriately addressed at the project level. Some issues have already been resolved through national level direction or analyzed at the Forest Plan level.

Once a significant issue is identified, measures are developed to analyze how each alternative responds to the issue. Measures are chosen that are quantitative (where possible), predictable, responsive to the issue, and linked to cause and effect relationships. These measures describe how the alternative affects the resource(s) at the heart of the issue. Monitoring and mitigation of the anticipated environmental effects of the project are also designed to be responsive to significant issues.

The Forest Supervisor determined four significant issues within the scope of the Kuiu Timber Sale decision. These issues are addressed through the proposed action and the alternatives and are as follows:

- Issue 1- Inventoried Roadless Areas,
- Issue 2-Deer Habitat and Subsistence Use,
- Issue 3-Timber Harvest Economics, and
- Issue 4-Cumulative Watershed Effects.

Some concerns will be addressed in the same way in all alternatives. For example, riparian and beach buffer strips will protect fish habitat from some of the effects of timber harvest in all alternatives. These measures are described in Chapter 2 in the section titled, “Design Criteria Common to All Action Alternatives.” They are also discussed in Chapter 3, Section 3.9 Fisheries.

## 1.9.1 Issue 1 – Inventoried Roadless Areas

Issue 1 relates to timber harvest and the related construction of new roads to facilitate timber harvest in roadless areas or in the smaller unroaded areas (Figure 3-1). Additional roads and harvest could result in reducing acres of roadless area in the Project Area, and could affect roadless values as identified in the 2003 *Tongass Land Management Plan Revision Final Supplemental Environmental Impact Statement – Roadless Area Evaluation for Wilderness Recommendations* (Forest Plan SEIS).

Nationally, roadless areas are considered to have valuable qualities. Several comments were received from the public concerning management of roadless in the Project Area. This analysis examines the values of two Inventoried Roadless Areas and three smaller unroaded areas that may be affected by this proposed project.



**1.9.2  
Issue 2 – Deer  
Habitat and  
Subsistence  
Use****Units of Measure**

To respond to this issue, alternatives will be compared according to how they affect acres and values of the two inventoried roadless areas and the three smaller unroaded areas within the Project Area. This evaluation will display the number of acres of proposed harvest and miles of road construction within Inventoried Roadless Areas and unroaded areas. Inventoried Roadless Areas will also be analyzed by their potential for Wilderness recommendation, and the changes to existing values as identified in the Forest Plan SEIS.

Issue 2 relates to cumulative effects on deer habitat and connectivity from past, present, and proposed activities, and the resulting effects on subsistence uses.

The cumulative reduction of important deer winter range for Sitka black-tailed deer from past, present, and proposed timber harvest may have adverse effects on the availability of deer for subsistence and may result in a significant possibility of a significant restriction to subsistence hunting. Sitka black-tailed deer are also a Forest Plan Management Indicator Species (MIS) which represents the habitat needs of several old-growth wildlife species that require low elevation, high volume habitat (see Issue 2: Deer Habitat and Subsistence Use, in Chapter 3).

Most impacts from timber harvest activities occur in Productive Old-growth Habitats (POG). Timber harvest and road construction could affect corridors connecting old-growth habitat. Specifically, travel corridors from low to high elevation habitat could be affected by proposed activities.

**Units of Measure**

Effects of timber harvest on Sitka black-tailed deer habitat will be evaluated by using the deer habitat capability model to measure the effects of the alternatives on acres of important deer winter range and potential deer carrying capacity of Wildlife Analysis Area (WAA) 5012, and by comparing model results to historic and current hunting effort data from ADF&G.

POG and low elevation/high volume POG will be analyzed by comparing changes in acres between current, proposed, and reasonably foreseeable future activities in the WAA.

Connectivity will be discussed by looking at the removal of existing corridors by proposed harvest units and, in particular, corridors linking high and low elevation habitat.

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## 1.9.3 Issue 3 – Timber Harvest Economics

Issue 3 relates to the economic viability of the proposed timber sale or sales. It also relates to the potential employment and the revenue generated for communities in the area. If proposed timber harvest alternatives are not designed to be economically viable across fluctuating market conditions, there is concern that the forest products industry in Southeast Alaska cannot remain viable.

### Units of Measure

Comparison of alternatives for this issue will include the amount (volume) of timber harvested, the value of the timber to be removed (stumpage values), the number of direct jobs and estimated direct income generated (present net value), the logging costs, and the anticipated contributions to the regional economy.

## 1.9.4 Issue 4 – Cumulative Watershed Effects

Watersheds within the Project Area have high value for fisheries. Two of the watersheds within the Project Area exceed 20 percent cumulative harvest within the last 30 years. The cumulative effects of harvest and road construction within the Project Area may affect the condition of stream channels that drain these watersheds.

### Units of Measure

To respond to this issue, alternatives will be compared according to: acres of proposed cumulative timber harvest within each major watershed; miles of new NFS and temporary road construction; and miles of NFS roads to be closed.

The analysis of cumulative watershed effects will also make use of: the Sediment Risk Index, a tool that integrates stream, soil and watershed characteristics to facilitate a comparison of the relative potential for sediment-related changes in stream channels to occur among a group of watersheds; an analysis of current stream channel conditions compared to the Tongass Fish Habitat Objectives; and projections of watershed recovery rates based on calculations of future cumulative harvest levels using a 30-year window.

## 1.10 Other Issues and Concerns

Many comments received during the public scoping process concerned issues that are not considered significant because they are already addressed through other processes or in the Forest Plan (see Design Criteria Common to All Action Alternatives, Section 2.4 in Chapter 2), or their resolution is beyond the scope of this project. As needed, resource effects related to these concerns are discussed in Chapter 3.

## 1.10.1 Issues Beyond the Scope of this EIS

Some comments received during scoping are not specific to the project or concern decisions that are made at a higher level of planning. These comments are paraphrased and addressed below.

### 1.10.1.1 No more logging or road building on National Forest Lands, the Tongass National Forest and/or Kuiu Island

There is a long legislative recognition that timber harvest is one of the appropriate activities on National Forests, starting with the founding legislation for National Forests in 1897. The National Forest Organic Act provides that National Forests may be established “to improve and protect the forest within the boundaries of, or for the purposes of securing favorable conditions of water flows and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.”

Congress’s policy for National Forests, as stated in the Multiple-Use Sustained Yield Act of 1960, is “the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” Accordingly, Congress has authorized the Secretary of Agriculture to sell trees and forest products from the National Forests “at no less than appraised value.” The National Forest Management Act directs that forest plans shall “provide for multiple use and sustained yield, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife, fish and wilderness.”

This was one of the significant issues raised during the development of the Forest Plan. During that forest planning process, a wide array of alternatives was developed and analyses were conducted to estimate the effects of those alternatives. The selected alternative documented in the Forest Plan Record of Decision permitted timber harvest to occur in certain areas on the forest. The majority of the Project Area is allocated to the Timber Production LUD, where timber harvest is permitted.

The No-Action Alternative for this EIS responds to this issue by not proposing timber harvest in the Project Area.

### 1.10.1.2 Protect all old-growth forests

The guidelines for management of old-growth forests are developed at the Forest Plan level. During the Forest Plan analysis, various strategies were analyzed for the protection of old-growth. This resulted in the forest-wide old-growth habitat reserve system. Other old-growth forests are protected by riparian, beach, and estuary fringe standards and guidelines and non-development land use designations. Some old-growth is designated as available for timber harvest by development

# 1 Purpose and Need

LUDs, such as Timber Production, Scenic Viewshed, and Modified Landscape.

## **1.10.1.3 Analyze the impacts of the project on carbon sequestering**

It is currently being addressed with the Forest Plan Amendment.

## **1.10.1.4 Identify the number of logging jobs that would be filled by seasonal, nonresident workers**

While this document provides an estimate of the number of jobs created by each alternative (Issue 3: Timber Sale Economics in Chapter 3), it is not possible to predict with any degree of reliability the residency of those who would fill the jobs that might be supported by a particular timber sale.

## **1.11 Federal and State Permits, Licenses, and Certifications**

To proceed with the activities proposed in this EIS, various permits from other federal and state agencies may be required. The following permits have been or will be obtained.

### ***U.S. Army Corps of Engineers***

Section 404 of the Clean Water Act (1977, as amended) requires a permit from the Corps of Engineers before filling or dredging in wetlands and tidelands. Section 10 of the Rivers and Harbors Act of 1899 requires Corps of Engineers approval for the construction of structures or work in navigable waters of the United States. This applies to the existing Rowan Bay and Saginaw Bay LTFs, for which any reconstruction at Saginaw Bay LTF would require an amendment to the existing permit. All roads proposed for this project meet the criteria for a silvicultural exemption from permits required by Section 404.

### ***U.S. Environmental Protection Agency***

A Storm Water Discharge Permit and a permit for discharge of bark and wood debris (Section 402 of the Clean Water Act) has been obtained. Both of these permits are required for the Rowan Bay and Saginaw Bay LTFs. The contractor will be responsible for obtaining the necessary stormwater discharge permits for log storage and handling at the LTFs, and for ground disturbing activities on more than one acre.



## ***State of Alaska, Department of Natural Resources***

Use of the Rowan Bay and Saginaw Bay LTFs requires authorization for occupancy and use of tidelands and submerged lands from the Alaska Department of Natural Resources. This permit has been obtained.

## ***State of Alaska, Department of Environmental Conservation***

A Certification of Compliance with Alaska Water Quality Standards (Section 401 Certification) has been obtained for the Rowan Bay and Saginaw Bay LTFs.

## **1.12 Applicable Laws and Executive Orders**

This section includes a partial list of federal laws and executive orders pertaining to project-specific planning and environmental analysis on federal lands. Disclosures and findings required by these laws and orders are found at the end of Chapter 3.

- Organic Administration Act of 1897 (as amended)
- Rivers and Harbors Act of 1899
- Migratory Bird Treaty Act of 1918 (as amended)
- Bald and Golden Eagle Protection Act of 1940 (as amended)
- Multiple-Use Sustained-Yield Act of 1960
- National Historic Preservation Act of 1966 (as amended)
- Wild and Scenic Rivers Act of 1968, amended 1986
- National Environmental Policy Act (NEPA) of 1969 (as amended)
- Clean Air Act of 1970 (as amended)
- Alaska Native Claims Settlement Act (ANCSA) of 1971
- Coastal Zone Management Act (CZMA) of 1972 (as amended)
- Marine Mammal Protection Act of 1972
- Endangered Species Act (ESA) of 1973 (as amended)
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended)
- National Forest Management Act (NFMA) of 1976 (as amended)
- Clean Water Act of 1977 (as amended)



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- American Indian Religious Freedom Act of 1978
- Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- Archeological Resource Protection Act of 1980
- Cave Resource Protection Act of 1988
- Native American Graves Protection and Repatriation Act (1990)
- Tongass Timber Reform Act (TTRA) of 1990
- Magnuson-Stevens Fishery Conservation and Management Act of 1996
- Executive Order 11593 (cultural resources)
- Executive Order 11988 (floodplains)
- Executive Order 11990 (wetlands)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (aquatic systems and recreational fisheries)
- Executive Order 13007 (American Indian Sacred Sites)
- Executive Order 13186 (Migratory Bird Treaty)

# **Chapter 2**

## **Alternatives**

## Chapter 2

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# Chapter 2

## Alternatives

### 2.1 Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Kuiu Timber Sale to meet the Purpose and Need and responds to the significant issues as described in Chapter 1. The following topics are discussed:

- The development of the Proposed Action and alternatives,
- A description and map of each alternative considered in detail,
- An overview of design elements,
- A comparison of the alternatives focusing on the evaluation criteria for the significant issues,
- Alternatives eliminated from detailed study, and
- Mitigation and monitoring.

Chapter 2 presents the alternatives in comparative form to inform the public and other agencies, and to provide a basis for a decision by the responsible official (40 CFR 1502.14). For a more complete discussion of the effects used to compare alternatives in Chapter 2 consult Chapter 3, "Affected Environment and Environmental Consequences."

#### 2.1.1 Proposed Action and Alternative Development

A Logging System and Transportation Analysis (LSTA) was developed to include all suitable commercial forest land as identified by the National Forest Management Act and the Forest Plan. From that LSTA, potential timber harvest units were identified. These units were field-verified to ensure their suitability, to identify any concerns, and to determine which silvicultural prescriptions would be feasible.

In response to the significant issues and comments received during scoping, three alternatives to the Proposed Action were developed, in addition to a No-Action Alternative. Other alternatives were considered but dropped from detailed analysis. The development of the alternatives led to deferring many potential timber harvest units from further consideration at this time.

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### 2.2 Changes Made Between the Draft EIS and Final EIS

- Reclassified up to 6.5 miles of temporary road construction as new National Forest System (NFS) roads based on a re-evaluation of the Project Area's long-term management needs.
- Due to a calculation error in the DEIS, total miles of new NFS and temporary road construction decreased from a maximum of 19 miles to a maximum of 10.4 miles in the FEIS.
- Due to soil stability analyses, unit boundaries were revised in Units 101, 207, 303 and 305 to avoid unstable slopes.
- Acres were dropped in Units 204 and 208b to form a buffer between these two units to ensure no opening would exceed 100 acres.
- Issue 2 was refined to be more responsive to public comments.
- Timber volume estimates were revised based on reduced acreage.
- The timber sale economics analysis was updated due to 1) the use of NEAT\_R (Version 2.10) which uses the residual value appraisal method and 2) the allowance of interstate shipping.
- In response to the allowance of interstate shipping, helicopter economic mitigations that left all trees less than 16 inches diameter at breast height (DBH) and western hemlock greater than 36 inches DBH were dropped.
- In accordance with the settlement agreement between NRDC vs US Forest Service, the Crane and Rowan Mountain Timber Sales ROD was withdrawn. This withdrawal occurred after the analysis for the FEIS was complete; therefore, where appropriate, the unharvested Crane and Rowan units are included as reasonably foreseeable activities in the cumulative analyses.
- Additional information was added, where appropriate, as requested through comments on the Draft EIS.

### 2.3 Alternatives Considered In Detail

The No-Action (Alternative 1), Proposed Action (Alternative 4) and three other action alternatives were considered in detail. Figures 2-1 through 2-5 display the five alternatives. Tables 2-1 and 2-2 compare the proposed activities and effects of the alternatives.

#### 2.3.1 Alternative 1 (Figure 2-1)

Alternative 1 proposes no timber harvest, road construction, changes to road management objectives, changes to small Old-growth Reserves (OGRs), or other activities within the Project Area at this time. It



## 2.3.2 Alternative 2 (Figure 2-2)

represents the existing condition of the Project Area, and does not preclude future timber harvest or other activities from this area.

Alternative 2 was developed to minimize impacts to wildlife and watersheds, and to have no direct effects to inventoried roadless areas or unroaded areas. The proposed timber harvest would result in the production of approximately 9.6 million board feet (mmbf) of timber from approximately 477 acres. Only ground-based logging systems would be used. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally feasible. Harvest units in the Recreational River Land Use Designation (LUD) would retain 50 percent of the stand basal area to maintain scenic values. Logs would be transported to an existing Logging Transfer Facility (LTF) in either Saginaw Bay or Rowan Bay.

Approximately 1.8 miles of NFS road and 1.5 miles of temporary road construction would be necessary for timber harvest. Road construction would not cross any Class I or II fish streams in this alternative. Additionally, approximately 4.1 miles of roads currently closed (Roads 6417, 6443, 46091, and 46094) would be opened and reconditioned to access timber. This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require placement of one crossing structure on a Class III stream, and five crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, approximately 7.8 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic and placed in storage (Roads 6413, 46021, and 46096).

Included in Alternative 2, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## 2.3.3 Alternative 3 (Figure 2-3)

Alternative 3 was developed by modifying Alternatives 2 and 4 to reduce impacts to resources such as wildlife, hydrology, and fisheries while providing a larger economic return. The proposed timber harvest would result in the production of approximately 15.9 mmbf of timber from approximately 786 acres. Only ground-based logging systems would be used. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally feasible.

## 2 Alternatives

Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 5.4 miles of NFS road and 2.1 miles of temporary road construction would be necessary for timber harvest. One bridge would be placed across a Class II fish stream on NFS Road 46030 to reduce potential impacts to fish. About 3.0 miles of roads currently in storage would be reconditioned to access timber (Roads 6417, 46091, and 46094). The opening of these roads would require the installation of two crossing structures on Class I streams and three crossing structures on Class II streams. Road construction and reconditioning would require placement of eight crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reopened NFS roads would be closed and all temporary roads would be decommissioned. In addition, approximately 8 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, and 46096).

Included in Alternative 3, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

### 2.3.4 Alternative 4 Proposed Action (Figure 2-4)

The Proposed Action for the Kuiu Timber Sale would result in the production of approximately 33.3 mmbf of timber from approximately 1,387 acres. A mix of ground-based and helicopter logging systems would be used. Helicopter logging would be used to access units on steeper ground. Helicopter use reduces the need for road construction and allows a more selective harvest on steeper slopes. The amount of trees remaining in a unit after harvest would vary from zero to fifty percent of the stand's pre-harvest basal area.

To provide stand structure for wildlife habitat, approximately 50 percent of the stand basal area would be retained where operationally feasible. Harvested units in the Recreational River LUD would retain 50 percent of the stand's basal area for scenic values. Where helicopter logging is specified, 50 percent of the stand basal area would be left to improve economics. Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 6.5 miles of NFS road and 3.9 miles of temporary road construction would be necessary for timber harvest. Road construction would require the installation of two crossing structures across Class II fish streams. Additionally, 6.1 miles of roads currently closed would be reconditioned to access timber (Roads 6417, 6422, 6443, 46091, and a portion of 6427). This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require placement of

14 crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, after timber harvest is complete, 10.5 miles of roads that are currently open and would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, 46021, 46096, and a portion of 6427).

Included in Alternative 4, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## **2.3.5 Alternative 5 (Figure 2-5)**

Alternative 5 proposes even-aged management with clearcut harvesting of timber to increase the economic return. The proposed timber harvest would result in the production of approximately 31.4 mmbf of timber from approximately 1,208 acres. Only ground-based logging systems would be used. Logs would be transported to existing LTFs in either Saginaw Bay or Rowan Bay.

Approximately 6.5 miles of NFS road and 3.5 miles of temporary road construction would be necessary for timber harvest. Road construction would require the installation of two crossing structures across Class II fish streams. Additionally, 6.1 miles of roads currently closed would be reconditioned to access timber (Roads 6417, 6422, 6443, 46091, 46094, and a portion of 6427). This would require the installation of three crossing structures on Class I streams, and three crossing structures on Class II streams. Road construction and reconditioning would require placement of 15 crossing structures on Class III streams, and 19 crossing structures on Class IV streams.

After timber harvest activities are complete, all new and reconditioned NFS roads would be closed and all temporary roads would be decommissioned. In addition, after timber harvest is complete, 10.5 miles of currently open roads that would be used to access timber for this project would be closed to motorized traffic (Roads 6413, 6418, 46021, 46096, and a portion of 6427).

Included in Alternative 5, the boundaries of three small OGRs (in VCUs 398, 399, and 402) were adjusted by an interagency group of biologists to meet Forest Plan criteria.

## **2.4 Design Criteria Common to All Action Alternatives**

All alternatives, including the Proposed Action, are consistent with the Tongass Land and Resource Management Plan. All applicable Forest Plan Standards and Guidelines have been incorporated into the design of the



## 2 Alternatives

proposed units and alternatives. Additional direction comes from applicable laws and Forest Service Manuals and Handbooks. Site-specific descriptions and resource considerations for each potential harvest unit are included as Unit Cards in Appendix B. These Unit Cards serve as the prescription or design narrative for the project. Design elements for NFS roads are also described in detail in Appendix B.

### 2.4.1 Small Old-growth Reserves

The small OGRs mapped in the Forest Plan FEIS have been evaluated for size, spacing, and habitat composition. An interagency review by biologists from the USDA Forest Service, Alaska Department of Fish and Game (ADF&G), and the U.S. Fish and Wildlife Service (USFWS) determined that alternative small OGRs within VCUs 398, 399, and 402 would better meet the requirements for size, connectivity, and acres of productive old-growth habitat. The review team recommended that the boundaries of the existing small OGRs be adjusted. All action alternatives would require a non-significant Forest Plan Amendment to adopt these recommendations.

The modified interagency OGR for VCU 398 would be approximately 2,305 acres, compared to 2,237 acres identified in the Forest Plan.

The modified interagency OGR for VCU 399 would be approximately 4,159 acres, compared to 2,628 acres identified in the Forest Plan.

The modified interagency OGR for VCU 402 would be approximately 5,273 acres, compared to 4,044 acres identified in the Forest Plan.

### 2.4.2 Beach and Estuary Fringe

The beach fringe extends 1,000 feet inland from mean high tide along all marine coastlines. The estuary fringe is an area of approximately 1,000 feet slope distance around all identified estuaries. The Forest Plan classifies the beach and estuary fringe as unsuitable for timber harvest (Forest Plan p. 4-5). No timber harvest or new roads are proposed at Saginaw Bay or Security Bay, which are the only beach and estuary fringes in the Project Area.

### 2.4.3 Fish Habitat and Water Quality

Forest Plan Standards and Guidelines for riparian areas are applied to all fish streams (Class I and II streams) and to non-fish-bearing streams (Class III and IV streams) within the Project Area. These areas are delineated according to the process group direction in the Forest-wide riparian standards and guidelines. This protection exceeds the requirements of the Tongass Timber Reform Act (TTRA), which mandates at least a 100-foot buffer zone where no commercial timber harvest can occur on either side of all Class I streams and on Class II streams that flow directly into Class I streams. No Riparian Management Area (RMA) buffers were adjusted for this project, and no timber harvest is proposed within any RMA for this project. Best Management Practices (BMPs) would be implemented to minimize the risk of land management activities impairing water quality on streams that are likely to require specific protection measures during implementation. Protection measures may include timing restrictions for in-stream activities, or site-specific

design of stream crossing structures. Any activities that occur on NSF roads are addressed on the Road Cards in Appendix B.

Site-specific design criteria for road management objectives show the timing restrictions for in-stream activities such as the replacement of bridges (see Table B-3 in Appendix B). Timing windows for in-stream work for roads and/or replacement of bridges would be coordinated with the Alaska Department of Fish and Game.

All BMPs would be incorporated during sale design and harvest administration. A National Pollutant Discharge Elimination System permit has been obtained for the Rowan Bay and Saginaw Bay LTFs. This permit provides for protection of water quality by eliminating discharge of surface water directly from the working area to the environment through the use of settling ponds and a drainage system.

Operators who maintain storage facilities for oil or oil products would take appropriate preventive measures to ensure that spills do not occur. If a spill did occur, action would be taken using emergency response materials to prevent petroleum products from entering any stream or other waters. A Spill Prevention Control and Countermeasures (SPCC) Plan that meets applicable EPA requirements would be prepared and maintained. Timber sale administrators would inspect petroleum storage facilities and the Purchaser's plan for spill prevention would ensure prepared emergency response plans are in place.

## 2.4.4 Soils

Field inspections located a few areas inside proposed timber harvest units that had slope gradients greater than 72 percent. On-site stability analyses, documented in the planning record and on Unit Cards, showed which areas are stable enough for timber harvest to occur. Harvest settings would be designed to achieve partial or full suspension where needed to minimize soil disturbance.

## 2.4.5 Wetlands

New NFS and temporary roads would be located and designed to avoid or minimize effects to wetlands where possible. Where roads would cross wetlands, shot rock would be used, and drainage structures would be designed to ensure that subsurface flow is not restricted.

## 2.4.6 Scenery

Proposed harvest units and treatments have been designed and prescribed to meet Forest Plan adopted visual quality objectives for the applicable land use designation.

## 2.4.7 Windthrow

Windthrow concerns within riparian buffers are addressed in the unit card narratives. Riparian buffers on south facing slopes in units with a prescription other than uneven-aged management by single tree selection would be protected by retaining additional trees adjacent to the buffers. In units with a two-aged, clearcut with reserves or uneven-aged, group selection prescription, some of the retention would be along the riparian buffers. In units with uneven-aged, single tree selection prescriptions, the distribution of trees across the unit would help protect the buffers. In units



## 2 Alternatives

with an even-aged prescription, the windthrow prone buffers would be protected by feathering the edge for a distance of 50 horizontal feet where trees are less than 16 inches DBH. Those trees that cannot be felled away from the buffer, would be retained.

### 2.4.8 Transportation

Roads placed in Maintenance Level 1 (ML 1) for this project would be open only for authorized activities and would not be open at any time for public use. A range of options exist to closing roads and meeting ML 1 standards following the timber sale activities. However, the implementation of BMPs and motorized closure is required for proper storage with all ML 1 roads to insure appropriate resource protection, regardless of the methods used to close the road. Given this, the actions taken to most effectively and efficiently meet BMPs and close roads to motorized use can vary depending on individual road characteristics. In limited situations, effectively closing roads to motorized use may require only a permanent gate. Most ML 1 road closures, however, will require at least an adequately sized tank-trap somewhere near the road's beginning. Commonly roads require additional deterrents for the first quarter to a half mile, depending on circumstances. These deterrents are usually provided by, but not limited to, removing drainage structures such as culverts. Each road is evaluated for the most effective and efficient closure prior to project implementation.

### 2.4.8 Rock Quarries

New rock quarries may be developed to support new road construction and road maintenance. Quarry sites would be developed within 500 feet of a road and avoid Class I and II stream buffers, old-growth habitat reserves, eagle and goshawk nest tree buffers and non-developmental LUDs. With either the expansion of an existing quarry or the development of a new site, the area footprint would not exceed five acres.

### 2.4.9 Log Transfer Facility (LTF) and Sort Yard

The existing permitted LTFs at Rowan Bay and Saginaw Bay may be used. In addition, an existing sort yard located near the LTF on the uplands would be used if necessary.

The Saginaw Bay LTF would require reconstruction, but the "footprint" of the LTF would not change. An existing sort yard located near the LTF on the uplands would be used if necessary. In addition to the storage area, a sort yard at the end of Road 6448, approximately one mile from the Saginaw LTF site is proposed for log sorting prior to storage at the LTF site. This site would be located at the old logging camp site.

### 2.4.10 Logging Camps

An area for a land-based logging camp at Rowan Bay, about five miles south of the Project Area, has been in use intermittently since the 1970s and could be used with the appropriate permits. A floating logging camp would also require permits. No camp is planned at Saginaw Bay.

**Table 2-1. Proposed activities by alternative for the Kuiu Timber Sale Area**

Proposed Activity		Alternative				
		1	2	3	4	5
<b>Acres of Timber Harvested by Treatment</b>						
<b>Even-aged Management</b>	Clearcut	0	197	409	1,025	1,208
<b>Uneven-aged Management</b>	Single tree selection - 50% basal area retention	0	87	72	193	0
	Group selection - 50% basal area retention	0	19	19	41	0
<b>Two-aged Management</b>	Clearcut with reserves - 50% area retention	0	175	286	128	0
<b>Total Acres</b>		<b>0</b>	<b>478</b>	<b>786</b>	<b>1,387</b>	<b>1,208</b>
<b>Acres of timber harvest by logging system</b>						
Cable		0	395	751	1,092	1,059
Shovel		0	83	35	147	149
Helicopter		0	0	0	148	0
<b>Miles of road maintenance/reconditioning/construction</b>						
Maintenance: miles of open NFS roads after harvest		56.2	48.0	47.8	45.2	45.2
Reconditioned: existing NFS roads (closed after harvest)		0	4.1	3.0	6.1	6.8
New Construction: NFS road (closed after harvest)		0	1.8	5.4	6.5	6.5
New Construction: temporary roads (decommissioned after harvest)		0	1.5	2.1	3.9	3.5
<b>Miles of road closure</b>						
NFS Roads (Maintenance Level 2 or above)		0	7.8	8.0	10.5	10.5

## 2.5 Comparison of Alternatives

The following discussion focuses on how each alternative responds to each significant issue. The existing condition will change over time for some resources even if no proposed activities are implemented. Table 2-2 at the end of this section compares alternatives in terms of their effects on each resource analyzed. For a complete discussion of the significant issues and other environmental considerations, refer to Chapter 3.

### 2.6.1 Issue 1 – Roadless Areas

This issue relates to timber harvest and the construction of new roads to facilitate timber harvest in roadless areas or in the smaller unroaded areas (Figure 3-1). Additional roads and timber harvest could result in reducing the amount of roadless acreage within the Project Area, and could affect roadless area values as identified in the Forest Plan SEIS. No alternative proposes timber harvest or road building in the Security Inventoried Roadless Area or would indirectly affect this IRA.

Alternatives 1 and 2 are the only alternatives with no proposed timber harvest or road construction within the North Kuiu Roadless Area. Alternative 1 does not propose any harvest or road construction within 600 feet of, or roads within 1,200 feet of, the edge of the roadless area, referred to as the zone of influence (refer to the discussion under Issue 1 – Roadless Areas, Chapter 3). Timber harvest and road construction in Alternative 2 would slightly affect the zone of influence, extending it into the roadless area.

Alternatives 3, 4, and 5 propose timber harvest and road construction within the North Kuiu Roadless Area.

In Alternative 3, approximately 67 acres (8 percent) of the 786 acres proposed for harvest are in the North Kuiu Roadless Area. About 0.06 mile of new NFS road and 0.13 mile of temporary road construction is proposed in the roadless area. Alternative 3 would also result in a total of 257 acres removed from the roadless area, including the 600-foot and 1,200-foot buffers.

In Alternative 4, approximately 205 acres (15 percent) of the 1,387 acres proposed for harvest are in the North Kuiu Roadless Area. About 0.33 mile of new NFS and 0.13 mile of temporary road construction is proposed in the roadless area. Alternative 4 would result in the greatest number of acres (551) removed from the roadless area, including the 600-foot and 1,200-foot buffers.

In Alternative 5, approximately 112 acres (9 percent) of the 1,208 acres proposed for harvest are in the North Kuiu Roadless Area. About 0.33 mile of new NFS and 0.13 mile of temporary road construction is proposed in the roadless area. Alternative 5 would also result in a total of 397 acres removed from the roadless area, including the 600-foot and 1,200-foot buffers.

For Alternatives 3, 4, and 5 the overall size of the North Kuiu Roadless Area would be reduced. However, the area would still be eligible for inclusion in the National Wilderness Preservation System and the values identified in the Forest Plan SEIS for roadless areas would be retained.

There are three smaller unroaded areas between 1,000 and 5,000 acres within the Project Area, totaling approximately 8,723 acres. Alternatives 1 and 2 would not harvest timber or build any roads within these unroaded areas. Alternative 3 proposes harvest of 68 acres within these areas and construction of 0.55 mile of new NFS road and 0.09 mile of temporary road. Alternatives 4 and 5 propose harvest of 167 acres and construction of 0.55 mile of new NFS road and 0.3 mile of temporary road within the unroaded areas. No timber harvest would occur in unroaded areas less than 1,000 acres in any of the alternatives.

## 2.6.2 Issue 2 – Deer Habitat and Subsistence Use

This issue relates to cumulative effects on deer habitat from past, present, and proposed activities and the potential corresponding effect to subsistence hunting. It considers the affects on productive old-growth (POG), on low elevation, high volume POG and travel corridors, particularly those between high and low elevation habitat.

Alternative 2 would harvest 477 acres of POG, with 280 acres retaining 50 percent of the stand's pre-harvest basal area. Alternative 3 would harvest 786 acres of POG, with 377 acres retaining 50 percent of the stand's pre-harvest basal area. Alternative 4 would harvest 1,402 acres of POG, with 399 acres retaining 50 percent basal area. Alternative 5 would harvest 1,206 acres of POG, clearcutting 100 percent of the acres harvested.

Low elevation productive old-growth has a high value for many wildlife species. Alternative 2 would harvest 101 acres of low elevation, high volume POG of which 60 acres would retain 50 percent of the stand's pre-harvest basal area. Alternative 3 would harvest 82 acres of low elevation, high volume POG, of which 57 acres would retain 50 percent of the stand's pre-harvest basal area. Alternative 4 would harvest 259 acres of low elevation, high volume habitat, of which 112 acres would retain 50 percent of the stand's pre-harvest basal area. Alternative 5 would harvest 156 acres of low elevation, high volume habitat, all of which would be clearcut.

Subsistence, an Alaska concern and a right protected by law, is a significant issue. Since 1954, there has been a 39 percent reduction in important deer winter range (HSI 0.6-1.0) within WAA 5012. The Project Area makes up approximately 32 percent of the WAA. At most, the action alternatives would reduce the important deer winter range within the WAA from the current condition by one percent. Considering reasonably foreseeable future harvest, cumulative habitat reductions within the WAA would still fall between 39 and 40 percent from historic condition. At present the deer population on Kuiu Island is below carrying capacity. A



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slight reduction in habitat should have little impact on deer populations because there is more habitat available than is currently utilized.

Among the action alternatives, Alternative 2 responds best to meeting wildlife and subsistence needs because it would retain the most winter habitat, and affects the fewest wildlife travel corridors. Alternative 5 proposes clearcut harvest and would affect the greatest number of wildlife travel corridors. Alternatives 4 and 5 would retain the least amount of winter habitat. Alternative 4, however, would retain more stand structure with several units retaining 50 percent of the basal stand area, which would allow more functional habitat and corridors than Alternative 5.

### 2.6.3 Issue 3 – Timber Harvest Economics

This issue relates to the economic viability of the proposed timber sale or sales. It also relates to the potential local employment and revenues generated for local communities. If proposed timber harvest alternatives are not designed to be economically viable across fluctuating market conditions, there is a concern that the forest products industry in Southeast Alaska cannot remain viable.

Timber economics depends on several factors. These factors include:

- The amount of timber harvested,
- The value of the timber harvested, and
- The cost of harvesting the timber.

More timber generally means a higher economic return and more jobs, or jobs over a longer period of time.

The value of the timber is determined by species composition, the amount of defect in the wood, and the value of the products that can be obtained from the wood. Road construction and helicopter logging increase the cost of timber harvest.

The amount of timber that would be harvested varies from none in Alternative 1 to 33.3 mmbf in Alternative 4, the Proposed Action. Alternative 5 proposes the next highest volume with 31.4 mmbf. Alternatives 2 and 3 propose the lowest volumes for harvest, 9.6 mmbf and 15.6 mmbf, respectively.

A financial analysis was done using the NEPA Economic Analysis Tool Residual Value (NEAT\_R) developed by the Alaska Region. For this analysis, it was assumed that all timber volume would be sold at one time.

The analysis showed that all of the action alternatives have a negative expected bid value. This reflects current economics and may change by the time the timber sale goes to bid.

All alternatives show a less negative expected bid when the Saginaw Bay LTF is used rather than the Rowan Bay LTF. This is due to a shorter tow distance from the Saginaw Bay LTF to the nearest mill.



If the Rowan Bay LTF is used, Alternative 5 would have the highest expected bid value of \$-141.28/mbf. Alternative 4 has the second highest value at \$-155.11/mbf, and Alternative 2 is next with \$-157.99/mbf. Alternative 3 has the lowest expected bid value of \$-179.99/mbf, due to the high ratio of partial harvest acres to the miles of temporary and NFS road construction.

If timber is hauled to the Saginaw Bay LTF, Alternative 5 would have the highest value of \$-126.92/mbf, followed by Alternative 2 with an expected bid value of \$-136.27/mbf. Alternative 4 would have the second lowest bid of \$-136.71/mbf and Alternative 3 would have the lowest expected bid value of \$-158.94/mbf.

Direct employment would be the same for all alternatives with 128 expected full time jobs. In March 2007 the Regional Forester approved a limited interstate shipping policy which authorizes shipment of specified unprocessed spruce and western hemlock sawlogs to the lower 48 States.

## 2.6.4 Issue 4 – Cumulative Watershed Effects

This issue relates to the cumulative effects of timber harvest and construction of roads in watersheds with previous management, particularly those watersheds in which over 20 percent of the watershed area has been harvested within the last 30 years.

Two watersheds are in excess of 20 percent harvested within a 30-year period, initiating a more intensive analysis in these watersheds. Alternative 1 would have the least effect on all watersheds in the Project Area, with no timber harvest or road construction proposed. If Alternative 1 were implemented, the 30-year cumulative harvest levels would be less than 15 percent in all Project Area watersheds by the year 2010.

Alternatives 2 and 3 would have the same two watersheds as Alternative 1 in excess of 20 percent harvested within a 30-year period. Alternatives 4 and 5 would have three watersheds in excess of 20 percent harvested within a 30-year period. However, by the year 2010, the cumulative harvest in all watersheds in all action alternatives would be less than 16 percent.

A sharp decline in the 30-year cumulative harvest levels between years 2001 and 2010 reflects a sharp decline in harvest rates within the Project Area since the 1960s and 1970s. Therefore, the cumulative watershed effect shows a general trend toward recovery of slope stability, pre-harvest rates of canopy interception, and evapotranspiration. Under the action alternatives the proposed harvest would cause small increases in the 30-year harvest levels. However, the overall trend in 30-year cumulative harvest levels is decreasing.

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### 2.6 Identification of the Preferred Alternative

In the DEIS, Alternative 4 was identified by the interdisciplinary team as the Preferred Alternative and approved by the Forest Supervisor. This was based on the environmental analysis and public and agency comments received to date. The Forest Supervisor may select this alternative, another alternative, or a modification of one of the alternatives. The Forest Supervisor may also select another OGR option from the small OGR options discussed in the Wildlife section in Chapter 3.

**Table 2-2. Comparison of alternatives by issue and effects**

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Issue 1 – Roadless Areas</b>					
Acres harvested within Inventoried Roadless Area (IRA)	0	0	67	207	114
Miles of NFS roads constructed within IRA	0	0	0.06	0.33	0.33
Miles of temporary roads constructed within IRA	0	0	0.12	0.13	0.13
Percent of affected IRA including zones of influence (600' for harvest, 1,200' for roads)	0	0	3%	6%	4%
Change in IRA roadless characteristics?	No	No	No	No	No
IRA still eligible for Wilderness designation?	Yes	Yes	Yes	Yes	Yes
Acres harvested within unroaded areas	0	0	68	167	167
Miles of NFS roads constructed in unroaded areas	0	0	0.55	0.55	0.55
Miles of temporary roads constructed within unroaded areas	0	0	0.09	0.3	0.3
<b>Issue 2 – Deer Habitat and Subsistence Use</b>					
Acres of POG maintained within the WAA	90,586	90,379	89,800	89,199	89,648
Acres of important deer winter range (HSI = 0.60 – 1.0) remaining after harvest in WAA 5012	21,971	21,843	21,841	21,660	21,725

**Table 2-2. Comparison of alternatives by issue and effects (continued)**

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Issue 2 – Deer Habitat and Subsistence Use (continued)					
Subsistence	Implementations of any action alternative for this project, in combination with past and reasonably foreseeable future timber harvest, will not likely result in a significant restriction on subsistence use of resources. However the Forest Plan predicts that by completing the harvest schedules at the end of the rotation (2095) there may be possible future restrictions for subsistence hunting for deer.				
Issue 3 – Timber Harvest Economics					
Amount of volume (mbf)	0	9,617	15,859	33,300	31,354
Indicated bid (\$/mbf) to Rowan Bay LTF	0	(\$157.99)	(\$179.99)	(\$155.11)	(\$141.28)
Indicated bid (\$/mbf) to Saginaw Bay LTF	0	(\$136.27)	(\$158.94)	(\$136.71)	(126.92)
Total Logging Costs per mbf (including road costs) to Rowan Bay LTF	0	\$397.10	\$417.05	\$393.10	\$378.35
Total Logging Costs per mbf (including road costs) to Saginaw Bay LTF	0	\$375.38	\$396.00	\$374.70	\$361.28
Road costs per mbf (construction and reconstruction) to Rowan Bay LTF	0	\$59.94	\$79.52	\$49.28	\$54.09
Road costs per mbf (construction and reconstruction) to Saginaw Bay LTF	0	\$59.94	\$79.52	\$49.28	\$54.09
Issue 4 – Cumulative Watershed Harvest Since 1977					
Acres of extreme risk hazard (MMI-4) soils in units	0	0	0	14	18
Cumulative timber harvest acres - % of Dean Creek Watershed (WS)	24.0	24.0	24.0	26.7	26.7
Cumulative timber harvest acres - % of Saginaw Creek Watershed (WS)	8.2	9.4	12.4	13.3	12.2
Cumulative timber harvest acres - % of WS #109-45-10090	18.8	19.9	18.8	23.4	23.4
Cumulative timber harvest acres - % of WS #109-44-10370	8.3	10.8	10.6	10.8	10.8
Cumulative timber harvest acres - % of Security Creek	22.5	23.3	24.4	25.2	25.2

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Table 2-2. Comparison of alternatives by issue and effects (continued)

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Cumulative timber harvest acres - % of Rowan Creek Watershed	8.0	9.0	8.8	9.8	10.0
Cumulative timber harvest acres - % of Kadake Creek Watershed	17.3	17.7	17.8	18.2	17.9
Other Environmental Considerations					
Effects on TES Species	Activities may impact individual goshawks but would not result in a trend toward listing. No effect for other species.				
Effects on Wildlife					
Project Area open road density (mi/mi <sup>2</sup> )	0.78	0.67	0.66	0.63	0.63
WAA 5012 open road density (mi/mi <sup>2</sup> )	0.46	0.42	0.42	0.41	0.41
Acres of high value marten habitat (HSI > 0.89) after harvest in WAA 5012	51,614	51,211	50,984	50,438	50,676
Acres of coarse canopy old-growth that would remain after harvest in the WAA	22,956	22,738	22,629	22,172	22,415
Acres low elevation / high value wildlife (POG below 800 feet) that would remain after harvest in the WAA	22,956	22,637	22,547	21,913	22,259
Effects on Water Quality					
Number of Class I stream crossings on closed roads and proposed temporary roads	0	3	2	3	3
Number of Class II stream crossings on closed roads and proposed temporary roads	0	3	4	5	5
Number of Class III stream crossings on closed roads and proposed temporary roads	0	1	8	14	15
Number of Class IV stream crossings on closed roads and proposed temporary roads	0	5	19	19	19
Miles of temporary road construction	0	1.5	2.1	3.9	3.5
Miles of currently open roads placed in storage (structures removed and roads waterbarred)	0	8.2	8.4	11.0	11.0
Effects on Wetlands					
Miles of temporary road on wetlands	0	0.01	0.1	0.6	0.6
Effects on Recreation	None				



**Table 2-2. Comparison of alternatives by issue and effects (continued)**

Units of Measure	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Effects on Scenery</b>					
Acres harvested in Recreational River LUD	0	18	0	49	0
<b>Effects on Heritage Resources</b>	None				
<b>Effects on Land Status</b>	None				

## 2.7 Alternatives Considered but Eliminated From Detailed Study

Not all alternatives considered during the planning were included in the EIS for detailed study. The alternative dropped from detailed analysis is described briefly below with the rationale for not considering it further.

### 2.7.1 Helicopter logging only

The possibility of developing a helicopter logging only alternative, which would eliminate the need for additional road construction, was considered at the request of U.S. Fish and Wildlife Service and other commenters. Helicopter logging is the most expensive yarding method, and using this method solely would not allow the cost to be offset by more cost-effective conventional ground-based systems. Forest Service handbook direction requires that the least cost methods be used to meet objectives and mitigate resource concerns. No resource concerns were identified that precluded road construction activities. Using the NEAT\_R economic model and given present market conditions, preliminary economics of helicopter logging showed that the alternative was cost prohibitive, therefore was eliminate from detailed study.

### 2.7.2 Microsales

Microsales were considered but were dropped because no communities exist on the island.

## 2.8 Mitigation

The analysis documented in this EIS discloses the possible adverse effects that may occur from implementing the actions proposed under each alternative. Many of these effects are reduced or avoided by using Forest Plan direction, including management prescriptions, standards and guidelines, and Best Management Practices (BMPs), which meet the requirements of the Clean Water Act. All unit-specific and/or alternative-specific mitigation is identified in Appendix B.

## 2.9 Monitoring

Monitoring is a tool which involves gathering data and information and observing the results of management activities as a basis for evaluation.



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Monitoring activities can be divided into project-specific monitoring and Forest Plan monitoring. The National Forest Management Act requires national forests to monitor and evaluate their forest plans (36 CFR 219.110). Chapter 6 of the Forest Plan includes the monitoring activities to be conducted as part of the Forest Plan implementation.

### 2.9.1 Forest Plan Monitoring

Forest Plan monitoring items are either contingent on management activities, such as those associated with this project, or are based on the condition of the Tongass National Forest as a whole. Much of the monitoring at the Forest Plan level consists of annually surveying a representative sample of harvest units or roads. Any implemented activities in the Project Area could be incorporated as described in the Monitoring and Evaluation Guidebook for the Tongass Land and Resource Management Plan (USDA Forest Service 2000).

### 2.9.2 Project- Specific Monitoring

Implementation monitoring is conducted at the project level. The selected management activities need to be consistent with the design criteria used to analyze the environmental effects during the planning stage. This ensures that the effects would not change from what was predicted.

#### 2.9.2.1 Implementation Monitoring

The IDT prepared unit and road cards to provide site-specific analysis and guidance for unit layout, road location during timber harvest, and road construction and road reconditioning needs. Unit cards include a unit map and a narrative explaining resource concerns and how the concerns could be addressed in the design of each unit. Road Management Objectives were developed for each NFS road (Road Cards, Appendix B).

Staff members who prepare timber sale contracts are required to confirm and certify that the contract is in agreement with the decision document. This certification verifies that items such as maps, number of acres, location of units, harvest methods, and stand numbers are consistent. The certification also ensures that all mitigation measures identified in the EIS relating to timber sale contract requirements are included in the contract.

Implementation monitoring continues through harvest and contract inspections. As a routine part of project implementation, sale administrators and road inspectors monitor harvest and construction activities. Through provisions contained in the timber sale contract or other contracts, contract administrators and inspectors ensure that the prescriptions contained on the unit and road cards are implemented. Sale administrators and road contract inspectors have the authority to initiate action to repair resource damage and suspend operations until problems have been corrected. This process ensures that project elements and Forest Plan Standards and Guidelines are implemented as designed. The Contract Administrators monitor all units and roads for implementation of the appropriate BMPs.





1.5.1.1 Timber Production LUD (42,905 acres)

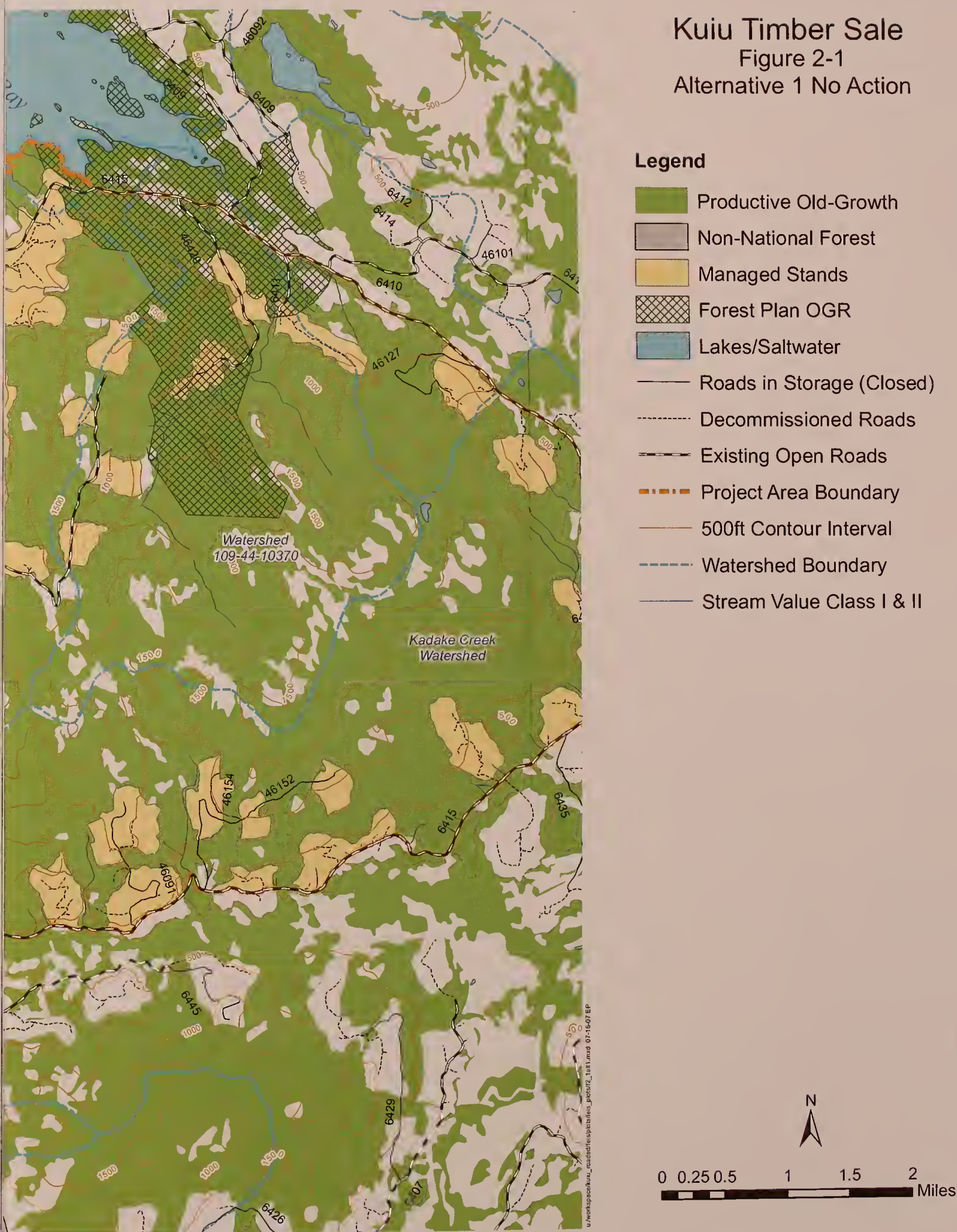
Tongass-wide these lands are managed for the production of saw timber and other wood products on an even-flow, long-term sustained yield basis. The forested areas are healthy stands with a balanced mix of age classes. An extensive road system is developed for accessing timber and subsequently used for recreation, hunting, fishing, and other public and administrative uses. Roads may be closed, either seasonally or year-round, to address resource and other needs. Management activities will generally dominate most seen areas. A variety of wildlife habitats, predominately in the early and middle successional stages, is present.

The Timber Production LUD includes areas of beach and estuary fringe, riparian reserves, high-vulnerability karst, Riparian Management Areas (RMAs), non-forested areas, and non-productive forested areas totaling approximately 8,182 acres. These acres are considered unsuitable for timber production and were removed from the suitable<sup>1</sup> timber base by the Forest Plan. Prior to the signing of the Forest Plan Record of Decision, approximately 1,739 acres of what is now considered unsuitable land for timber production had been harvested. Most of this harvest took place in what are now recognized as riparian areas, beach fringe areas, and non-development LUDs. These acres are included in the total acres harvested discussion in the “Prior Management of the Area” section in this chapter and throughout the EIS.

Approximately 29,362 acres in the Timber Production LUD are considered suitable for timber production, and 8,654 of these acres have been previously harvested. Of the total acres harvested in the Project Area (approximately 1,739 from unsuitable lands and 8,654 from suitable lands), 4,766 acres have been pre-commercially thinned. The remaining 5,627 acres are too young and not large enough for commercial thinning. The second-growth that is on suitable land is not proposed for harvest at this time.

<sup>1</sup> Suitable Forest land - Forest land that is producing or is capable of producing crops of industrial wood and; 1) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; 2) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; 3) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within five years after final harvest, 4) adequate information is available to project responses to timber management activities, and 5) where timber harvest is allowed under the Forest Plan.

Kuiu Timber Sale  
Figure 2-1  
Alternative 1 No Action











# Kuiu Timber Sale

Figure 2-2  
Alternative 2



## Legend

- Clearcut (0% Retention)
- 50% Retention-Clearcut with Reserves
- 50% Retention-Group Selection
- 50% Retention-Single Tree Selection
- Productive Old-Growth
- OGR Option 2
- Managed Stands
- Non-National Forest
- Roadless Areas
- Lakes/Saltwater
- 500ft Contour Interval
- Project Area Boundary
- Decommissioned Roads
- Roads in Storage (Closed)
- Existing Open Roads
- Reconditioned Roads
- Proposed Temporary Roads
- Proposed System Roads
- Watershed Boundary
- Stream Value Class I & II



0 0.25 0.5 1 1.5 2 Miles



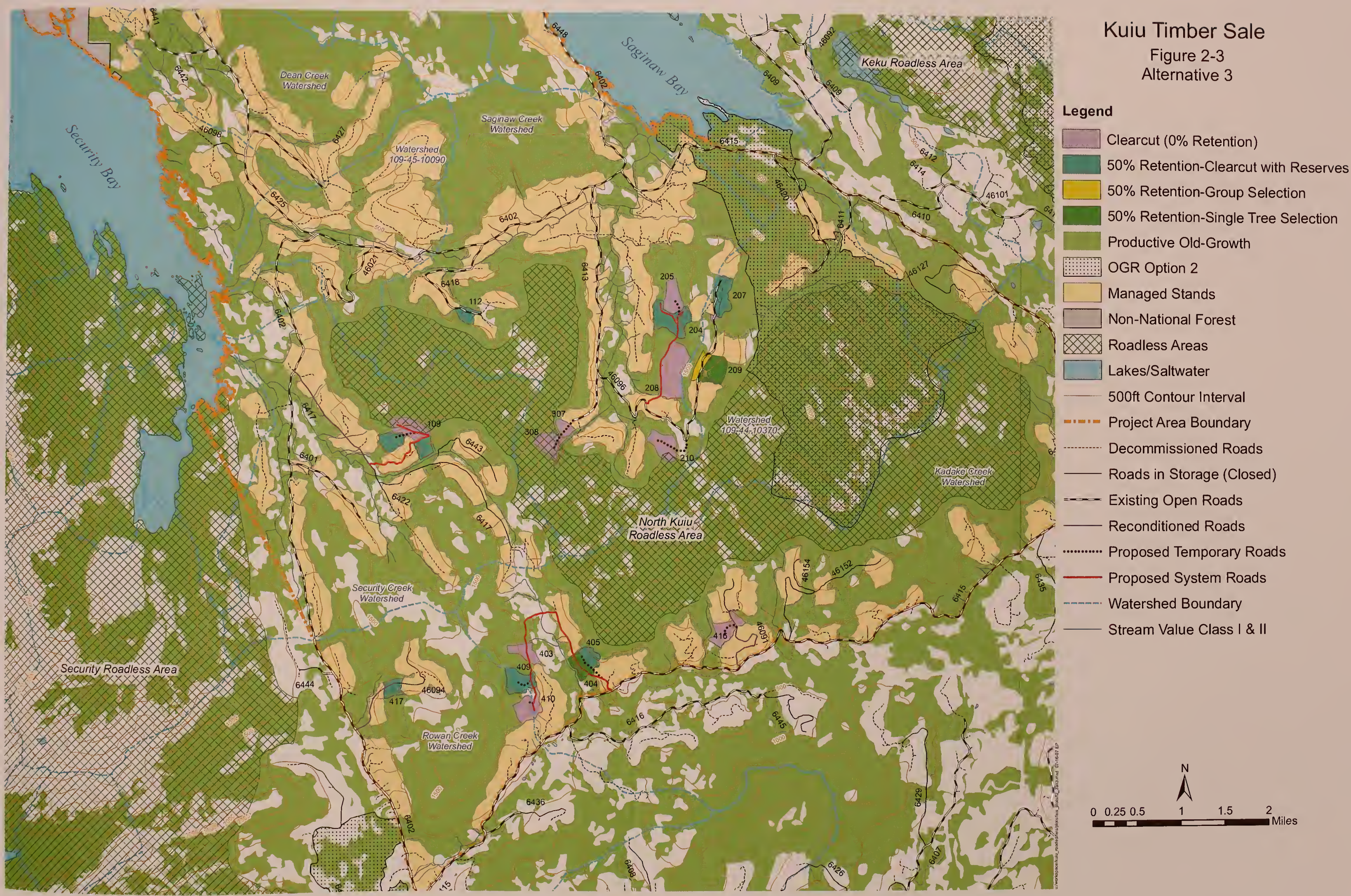






# Kuiu Timber Sale

Figure 2-3  
Alternative 3











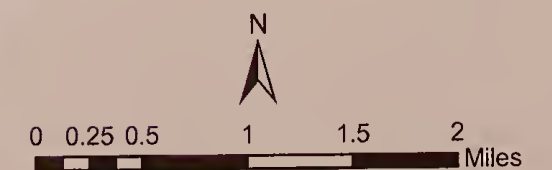
# Kuiu Timber Sale

Figure 2-4

Alternative 4 Proposed Action

## Legend

- Clearcut (0% Retention)
- 50% Retention-Clearcut with Reserves
- 50% Retention-Group Selection
- 50% Retention-Single Tree Selection
- Productive Old-Growth
- OGR Option 2
- Managed Stands
- Non-National Forest
- Roadless Areas
- Lakes/Saltwater
- 500ft Contour Interval
- Project Area Boundary
- Decommissioned Roads
- Roads in Storage (Closed)
- Existing Open Roads
- Reconditioned Roads
- Proposed Temporary Roads
- Proposed System Roads
- Stream Value Class I & II
- Watershed Boundary






























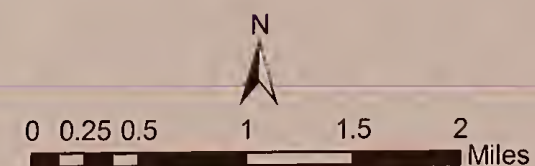
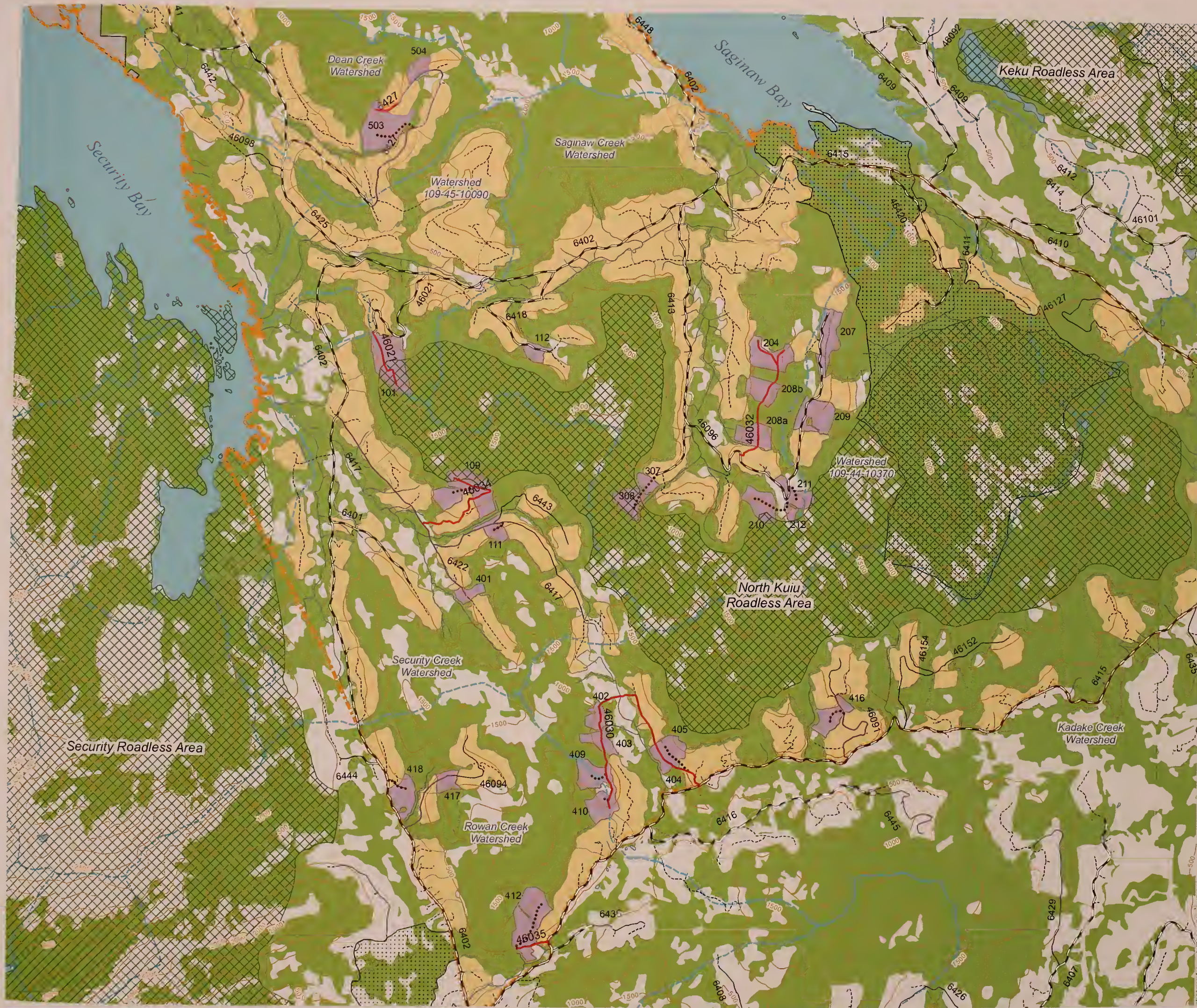
# Kuiu Timber Sale

## Figure 2-5

### Alternative 5

#### Legend

-  Clearcut (0% Retention)
-  Productive Old-Growth
-  OGR Option 2
-  Managed Stands
-  Non-National Forest
-  Lakes/Saltwater
-  Roadless Areas
-  Proposed System Roads
-  Proposed Temporary Roads
-  Project Area Boundary
-  Reconditioned Roads
-  Existing Open Roads
-  Roads in Storage (Closed)
-  Decommissioned Roads
-  500ft Contour Interval
-  Stream Value Class I & II
-  Watershed Boundary









# **Chapter 3**

## **Affected Environment and Environmental Consequences**

## Chapter 3

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# **Chapter 3**

## **Affected Environment and Environmental Consequences**

### **3.1 Introduction**

This chapter provides information concerning the existing environment of the Kuiu Timber Sale Area (Project Area), and potential consequences to that environment as a result of this project. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Each resource potentially affected by the Proposed Action or other alternatives is described by its current condition and uses. Findings and disclosures required by policy and law are included at the end of the chapter.

The chapter begins with a description of the environmental effects on resources associated with the four significant issues in the Project Area. Other concerns raised during scoping that are not significant issues are discussed in sections 3.6 to 3.15 of this chapter. These include potential effects (environmental consequences) that are mitigated in the same way in all alternatives, or resources that are not significantly affected by any alternative. All effects, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are included. The means by which potential adverse effects would be reduced or mitigated are described (Chapter 2 and Appendix B).

The discussions of resources and potential effects use existing information included in the Forest Plan, other project environmental analyses, project-specific resource reports, agency and scientific studies, and related information. Where applicable, such information is briefly summarized and referenced to minimize duplication. The planning record for the Project Area includes all project-specific



# 3 Environment and Effects

## 3.1.1 Administrative and Ecological Land Divisions

information, including resource reports, documentation of field investigations, and information resulting from public involvement efforts. The planning record is located at the Petersburg Ranger District Office in Petersburg, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

The land area of the Tongass National Forest has been divided in several different ways to describe the different resources and facilitate systematic and consistent analysis. These divisions vary by resource as the relationship of each resource to geographic conditions and zones varies.

### 3.1.1.1 Land Use Designations (LUDs)

The allocation of land use designations (LUDs), as discussed in Chapter 1, was accomplished with the Forest Plan. Each LUD provides for a combination of activities, goals and objectives, and uses. There are three LUDs within the Project Area. These are Timber Production, Recreational River, and Old-growth Habitat. The standards and guidelines for these LUDs were used for unit design and to analyze effects on scenery. The LUDs within the Project Area are discussed and displayed in Chapter 1.

### 3.1.1.2 Watersheds

The spatial analysis area for the assessment of all direct, indirect, and cumulative effects to watershed resources in the Project Area includes the entire Dean Creek, Saginaw Creek, Security Creek, Rowan Creek and Kadake Creek watersheds, and unnamed watersheds #109-45-10090 and #109-44-10370. Other watersheds and portions of watersheds where no timber harvest is proposed occur within the Project Area. Cumulative effects were also considered for these watersheds. The watershed boundaries correspond to the 6th level Hydrologic Unit Code (HUC), and all are true watersheds, meaning that each watershed is well defined by topographic boundaries and all surface water within the watershed drains to a single stream or river. The watershed boundaries are large enough to allow a comprehensive accounting of all activities that affect current and future watershed conditions, yet small enough to allow the analysis to be sensitive to the potential effects of the proposed activities (Regional Interagency Executive Committee 1995).

### 3.1.1.3 Heritage (Area of Potential Effect)

The project's Area of Potential Effect (APE) is the geographic area where timber harvest and road construction may cause changes in the character or use of historic properties, if any such properties exist [36 CFR 800.2(c)]. The APE is defined early in the planning process before identification of historic properties actually begins so it may not

be known whether any historic properties exist within it. The APE includes all areas where the undertaking may cause changes to land or structures, or to their uses, whether the changes would be direct or indirect, beneficial or adverse. A combination of landscape features, Project Area boundaries, and areas where timber harvest and road building are proposed were used to help define the APE boundaries (see Figure 3-12).

#### **3.1.1.4 Inventoried Roadless Areas**

Inventoried Roadless Areas are undeveloped areas typically exceed 5,000 acres and meet the minimum criteria for Wilderness consideration under the Wilderness Act. The Project Area includes the entire North Kuiu Roadless Area and a portion of the Security Roadless Area.

#### **3.1.1.5 Value Comparison Units (VCUs)**

For the purposes of project-level analysis, the Tongass National Forest is divided into Value Comparison Units (VCUs). These are distinct geographic areas, each encompassing a drainage basin containing one or more large stream systems. The boundaries usually follow major watersheds. The Project Area includes lands within VCUs 399, 400, 402 and 421 on the northern portion of Kuiu Island. VCUs are used to analyze the size of small OGRs, and scenery, as VCUs are similar in land area to viewsheds.

#### **3.1.1.6 Project Area**

The Project Area is located on the Petersburg Ranger District of the Tongass National Forest in Southeast Alaska, on north Kuiu Island, approximately 12 air miles southwest of the city of Kake (Kupreanof Island). More specifically, the Project Area is within Townships 57, 58, and 59 South, Ranges 71 and 72 East, Copper River Meridian and includes lands within Value Comparison Units (VCUs) 399, 400, 402, and 421. It is encompassed by National Forest System (NFS) Roads 6402 and 6415 and the peninsula between Security Bay and Saginaw Bay.

The size of the Project Area is approximately 46,102 acres (Figure 1-2), 356 acres of which are non-national forest system lands. Access to the area is by boat or floatplane.

#### **3.1.1.7 Wildlife Analysis Areas (WAAs)**

Wildlife Analysis Areas (WAAs) are land divisions used by the Alaska Department of Fish and Game to report community harvests of selected wildlife species. The Project Area makes up approximately 32 percent of WAA 5012. Some of the wildlife and subsistence analyses for the Project Area are reported by WAA.

# 3 Environment and Effects

## 3.1.1.8 Biogeographic Province

Twenty-one ecological subdivisions of Southeast Alaska are identified by distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature and the barriers that distinguish each province. Effects to wolves were analyzed at this landscape scale.

## 3.1.2 Analyzing Effects

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. The Council on Environmental Quality (CEQ) regulations, implementing the National Environmental Policy Act (NEPA), include a number of specific categories for the analysis of environmental consequences. Several are applicable to the analysis of the proposed project and alternatives and form the basis of much of the analysis that follows. They are explained briefly here.

### 3.1.2.1 Direct, Indirect, and Cumulative Effects

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity, but could have some effect in the foreseeable future. Cumulative effects result from incremental effects of actions when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions over time.

The Catalog of Events for Kuiu Island lists all past, present, and foreseeable future activities. It includes known private, federal and state projects as well as Forest Service activities. Foreseeable future activities include those projects that have a developed proposed action, been funded and/or has been cleared through NEPA. Each resource specialist considered the catalog and included events that were included in the cumulative effects analysis. These activities are identified in the cumulative effects section for each resource in this chapter. The catalog is located in the project planning record at the Petersburg Ranger District.

### 3.1.2.2 Unavoidable Adverse Effects

Implementation of any action alternative may cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of other resources. Many adverse effects can be reduced, mitigated, or avoided by limiting their extent or duration. The interdisciplinary procedure used to identify specific harvest units and roads was designed to eliminate or lessen the



significant adverse consequences. The application of Forest Plan Standards and Guidelines, BMPs, project-specific mitigation measures, and monitoring are intended to limit the extent, severity, and duration of potential effects. The purpose of this chapter is to discuss such measures and fully disclose any adverse effects.

### **3.1.2.3 Short-term Use and Long-term Productivity**

Short-term uses and their effects are those that occur annually or within the first few years of project implementation. Long-term productivity refers to the capability of the land and resources to continue producing goods and services long after the project has been implemented. Under the Multiple-Use Sustained Yield Act and the National Forest Management Act (NFMA), all renewable resources are to be managed in such a way that they are available for future generations. Timber harvest can be considered a short-term use of a renewable resource. As a renewable resource, trees can be reestablished if the long-term productivity of the land is maintained. This long-term productivity is maintained through the application of the resource protection measures described in Chapter 2, in particular those applying to the soil and water resources. These protection measures are also discussed throughout this chapter, in particular for soils, water quality, biodiversity, and economics.

### **3.1.2.4 Irreversible and Irretrievable Commitments**

Irreversible commitments are decisions affecting non-renewable resources such as soils, wetlands, and heritage resources. Such commitments are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a geologic time period, at a great expense, or not at all. The destruction of an archaeological site is an example of an irreversible commitment. The implementation of this project is not expected to result in irreversible effects.

Irretrievable commitments represent opportunities foregone for the period during which resource use or production cannot be realized. Such decisions are reversible, but the production opportunities foregone are irretrievable. For example, the construction of a NFS road for long-term management is an irretrievable action. The commitment is irretrievable rather than irreversible, because trees could be reestablished in this area, but the amount of timber production during the period of time when the land was used as a road could not be regained.

# 3 Environment and Effects

## 3.1.3 Resource Information on Geographic Information System

Much of the Tongass National Forest resource data resides in an electronic database formatted for a geographic information system (GIS). The Forest uses GIS software to assist in the analysis of this data. GIS data is available in tabular (numerical) format, and as plots displaying data in map format. For this EIS, all of the maps and most of the numerical analyses are based on GIS resource data.

GIS data does have limitations. This is especially true when comparing data layers used for the Forest Plan with project-specific data layers.

The GIS data uses data collected during field reviews. Initially, the GIS data is obtained by aerial photo interpretation, then areas that project activities may affect were field inventoried and the GIS data is updated where the information is available. GIS data and layers become part of the project planning record.

## 3.1.4 Available Resource Information

There is incomplete knowledge about many of the conditions and relationships of forest resources and social needs. Forest management is a complex and developing science. Wildlife population dynamics and habitat relationships are not completely understood. The interaction of forest resource supply with economic and social conditions and communities is an inexact science. However, the basic data and central relationships are sufficiently established in the respective sciences to adequately assess and disclose the possible adverse environmental consequences.

## **3.2 Issue 1 – Roadless Areas**

### **3.2.1 Introduction**

Inventoried Roadless Areas (roadless areas) were originally identified during the Roadless Area Review and Evaluation studies (RARE I and RARE II) conducted in the 1970s. Roadless areas refer to undeveloped areas typically exceeding 5,000 acres that meet the minimum criteria for Wilderness consideration under the Wilderness Act.

Roadless areas and their values are issues of national importance. Many of the comment letters received for the DEIS expressed concern for harvest and road construction in roadless areas. Most of the letters were from out of state and were from people who have never visited the Tongass.

On the Tongass National Forest, many of the biological and social values of roadless areas were taken into consideration when determining the LUDs for the Forest Plan. The Project Area includes all of the North Kuiu Roadless Area and a small portion of the Security Roadless Area.

### **3.2.2 Background**

Areas meeting the roadless criteria were inventoried during the Forest Service's RARE II process, subsequent assessments, or forest planning. The inventory conducted by the Tongass National Forest and published in the Tongass Forest Plan Supplemental Environmental Impact Statement 2003, (Forest Plan SEIS) represents the best and most recent inventory on the Tongass.

In the evaluation of roadless areas, all Tongass National Forest lands were assessed to determine if they were suitable for Wilderness as based on the Wilderness Act and the procedures in the Forest Service planning directives. Appendix C (SEIS Volumes II and III) includes documentation of the analysis and evaluation for each Inventoried Roadless Area and describes the relative contribution each roadless area would make to the National Wilderness Preservation System. The Forest Plan SEIS identified and evaluated roadless areas that met minimum criteria for potential inclusion in the National Wilderness Preservation System using the Wilderness Attribute Rating System (WARS). This system was used to inventory the wilderness characteristics of Inventoried Roadless Areas. The purpose of WARS was to provide a measure of an area's wilderness quality, based on the key attributes of wilderness as defined in the Wilderness Act.

#### **3.2.2.1 Roadless Analysis in the Forest Plan**

During the revision of the Forest Plan, all areas, including roaded and roadless, were analyzed. The Forest Plan allocates some portions of roadless areas to Timber Production, Modified Landscape, and Scenic Viewshed LUDs, all of which allow roads, road construction, and



# 3 Environment and Effects

timber harvest. Other portions of roadless areas are allocated to non-development LUDs. These allocations include Old-growth Habitat, Remote Recreation, Semi-remote Recreation, Special Interest Areas, and Recreational River LUDs. About 74 percent of the roadless area in the Tongass National Forest are included in non-development LUDs.

## 3.2.2.2 Roadless Area Conservation Rule

The Roadless Area Conservation Rule (January 12, 2001) has been the subject of several lawsuits. In the most recent ruling (September 20, 2006), the court re-instituted the rule as it appears in the July 1, 2004 edition of 36 CFR Chapter II, Parts 200 to 299, and includes the text: "this subpart does not apply to road construction, road reconstruction, or the cutting, sale or removal of timber in inventoried roadless areas on the Tongass National Forest" (294.14(d)).

## 3.2.3 Current Condition

### 3.2.3.1 Introduction

Most of Southeast Alaska is currently unroaded. About 74 percent of the roadless areas are within LUDs that would retain their unroaded condition through the life of the Forest Plan (Forest Plan SEIS Record of Decision p. 12). There are eight roadless areas on Kuiu Island. Table 3-1 lists the size of each roadless area along with acres in Development and Non-development LUDs.

The Forest Plan 2003 inventory identified two roadless areas that overlap the Project Area (North Kuiu #241 and Security #240). These two roadless areas are included in the area of analysis along with the entire sale area. All other roadless areas are outside the area of analysis because the integrity of those areas would not be affected by any of the proposed activities. Figure 3-1 shows the location of the roadless areas on the northern portion of Kuiu Island. The proposed action alternatives would not make any roadless areas ineligible for Wilderness designation. However, the size of North Kuiu Roadless Area may be reduced, as described later in this analysis.

**Table 3-1. Kuiu Island Inventoried Roadless Areas**

Roadless Area	Roadless Area number	Non-development acres <sup>a</sup>	Acres in Development LUDs	Total acres in Roadless Area
Keku	239	3,062	8,108	11,170
Security	240	26,104	9,393	35,497
North Kuiu	241	734	8,810	9,544
Camden	242	8,095	32,300	40,395
Rocky Pass <sup>b</sup>	243	73,961	5,142	79,103
Bay of Pillars	244	27,782	946	28,728
East Kuiu <sup>c</sup>	245	16,711	29,684	46,395
South Kuiu	246	63,063	0	63,063
<b>Total Acres</b>		<b>219,512</b>	<b>94,383</b>	<b>313,895</b>

<sup>a</sup> Forest Plan allocation<sup>b</sup> Includes acres on both Kuiu Island and Kupreanof Island<sup>c</sup> Includes some small islands off the coast of Kuiu Island**3.2.3.2 Roadless Areas**

All of the North Kuiu Roadless Area, a portion of the Security Roadless Area, and three smaller unroaded areas lie within the Project Area (Table 3-2 and Figure 3-1). The Inventoried Roadless Areas are North Kuiu (#241) and Security (#240). They lie near the existing road system. Although infrequent, sights and sounds of vehicles traveling the road system may occur. These noises are temporary and of short duration.

**Table 3-2. Acres of Inventoried Roadless Area within the Project Area**

Roadless Area	Total acres	Roadless Area acres within Project Area
North Kuiu (#241)	9,544	9,544
Security (#240)	35,497	134

3.2.3.3 Security Roadless Area #240

The Security Roadless Area is located on the northwest side of Kuiu Island, approximately 15 air miles southwest of Kake and about 50 air miles west of Petersburg. Chatham Strait lies to the west, Security Bay to the northeast, and Frederick Sound to the north.

Approximately 134 acres of the Security Roadless Area are within the Project Area boundary, but there are no proposed or reasonably foreseeable future activities within this roadless area. Therefore, this roadless area will not be discussed further. Additional information on the Security Roadless Area is available in the Roadless Area Analysis located in the planning record.

3.2.3.4 North Kuiu Roadless Area #241

The North Kuiu Roadless Area is located near the center of the northern portion of Kuiu Island. Roads surround the area and provide access to Rowan Bay (Figure 3-1). Petersburg is approximately 40 air miles from the roadless area. Kake, the nearest town, is located approximately 10 air miles away on Kupreanof Island.

*Management Direction and Current uses*

The majority of this roadless area, 92 percent, was allocated to the Timber Production LUD. Approximately eight percent of the roadless area was allocated to non-development LUDs (Table 3-3).

There are no developed recreation sites in the roadless area. Deer hunting is the primary recreational use. There is some subsistence use in the area but most is concentrated along the road-accessible areas outside of the roadless area.

Table 3-3. North Kuiu Roadless Area LUDs

LUD	Acres of LUD in roadless area	Percent roadless area
Timber Production	8,810	92%
Old-growth Habitat	385	4%
Recreational River	349	4%
Total	9,544	100%



**3.2.3.5 Unroaded Areas**

In addition to analyzing roadless areas, the Forest Plan SEIS also identified unroaded areas with fewer than 5,000 acres, but of a size and configuration sufficient to protect the inherent characteristics associated with their roadless condition. Unroaded areas do not overlap with roadless areas and do not meet the minimum size requirement of 5,000 acres for potential Wilderness consideration.

Unroaded areas are divided into two categories: areas greater than 1,000 acres but less than 5,000 acres in size, and areas less than 1,000 acres in size.

The Project Area has three unroaded areas between 1,000 acres and 5,000 acres in size (Figure 3-1).

There are no proposed timber harvest units or roads in any of the unroaded areas less than 1,000 acres in size within the Project Area; therefore, these areas will not be analyzed further for this project.

### **3.2.4 Effects on the North Kuiu Roadless Area**

**3.2.4.1 Introduction**

The Forest Plan SEIS GIS layer reflects the best and most current information on the Tongass roadless areas and was used for summarizing the information required for the following analysis.

The units of measure used are a comparison of acres lost by alternative for the direct effect of harvest or road construction and indirect effects of incorporating the “zones of influence” to the units and roads (Table 3-4 and 3-5) and the changes in rating to the values as identified in the Tongass Forest Plan (SEIS 2003) (Table 3-6).

The inventory criteria used for this project is the same used to delineate roadless areas in the Forest Plan and the Forest Plan SEIS. The zone of influence includes all areas within 1,200 feet of an existing road, and 600 feet of an existing harvest unit, and are considered developed for the purpose of this analysis. Small areas surrounded by development and long narrow strips of unroaded areas are also considered developed and are not included in the roadless area acres. Helicopter units do not receive the 600-foot zone of influence buffer according to the Forest Plan SEIS (p. 2-5).

Some of the timber harvest units are proposed for partial harvest, which produces fewer effects than clearcutting. Helicopter logging further reduces effects because it does not require as much road building, thereby limiting access to the roadless area.

There are no reasonably foreseeable future activities planned within the North Kuiu Roadless Area.

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## 3.2.4.2 Effects Common to all Alternatives

In all alternatives, the North Kuiu Roadless Area would remain greater than 9,000 acres in size and would remain eligible for Wilderness consideration in subsequent forest planning (Tables 3-4 and 3-5).

The values shown in Table 3-6 have been identified as key characteristics of roadless areas in the National Forest System (Forest Plan SEIS 2003). The North Kuiu Roadless Area is evaluated using these national criteria.

Most of the North Kuiu Roadless Area is within one mile of a road. Logging activities and traffic may be heard from the existing logging roads surrounding the roadless area and from the eastern boundary of the Security Roadless Area. These logging roads were present when roadless areas were analyzed for the Forest Plan Final EIS. Additional miles of NFS and temporary roads proposed in the action alternatives would be extensions of the existing road system.

Table 3-4. Effects on the North Kuiu Roadless Area<sup>a</sup> by alternative

Measure of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Harvest unit acres in Roadless Area	0	0	67	205	112
Percent of Roadless Area affected	0	0	<1%	2%	1%
Acres <sup>b</sup> of temporary roads in Roadless Area (all would be closed after harvest)	0	0	0.92	2.23	2.23
North Kuiu Roadless Area acres after harvest	9,544	9,544	9,476	9,337	9,430

<sup>a</sup> This table uses the Forest Plan SEIS Roadless acres.  
<sup>b</sup> One mile of road construction (NFS or temporary) equals 4.85 acres.

Timber management activities have occurred on all sides of the North Kuiu Roadless Area. Total acres of the area would be reduced by timber harvest and road building in Alternatives 3 through 5; however, the area is currently influenced by roads and managed stands, therefore the effect on the overall characteristics and values would be minimal. The irregular shape of the roadless area, patterns of adjacent timber management, and roads affect its natural integrity, making it poorly suited for wilderness classification. There are no special attractions, features or unique values in this roadless area. It received a Wilderness Attribute Rating score of 15 out of 28 points (USDA 2003c).

**Table 3-5. Indirect Effects on the North Kuiu Roadless Area<sup>a</sup> by alternative, including Zones of Influence of harvest and road construction**

Measure of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of Roadless Area affected <sup>b</sup>	0	11	257	551	397
Percent of Roadless Area affected	0	0	3%	6%	4%
North Kuiu Roadless Area acres after harvest <sup>b</sup>	9,544	9,533	9,287	8,993	9,147

<sup>a</sup> This table uses the Forest Plan SEIS Roadless acres.

<sup>b</sup> Total includes 600-foot buffers around proposed timber harvest units and 1,200-foot buffers along proposed NFS and temporary roads within the roadless areas.

### 3.2.4.3 Comparison of Alternatives

Alternatives 1 and 2 would not directly affect the North Kuiu Roadless Area. These alternatives do not propose any timber harvest units or roads within the roadless area. Alternative 1 would not affect the zone of influence; however, Alternative 2 would affect 11 acres due to roads or timber harvest extending the zone of influence into the roadless area.

Alternatives 3, 4, and 5 include portions of timber harvest units within the boundary of the North Kuiu Roadless Area. The direct reduction of acres due to harvest and road building would vary between 67 acres in Alternative 3, to 205 acres in Alternative 4. These alternatives include units that would be located within 600 feet of the roadless area; therefore, their zones of influence would extend into the edge of the roadless area. This would indirectly reduce the overall size of the roadless area by a maximum of 551 acres (Alternative 4).

Of the four action alternatives, Alternative 4 would have the greatest direct effect on the North Kuiu Roadless Area, with up to 205 acres harvested from eight units within the roadless area and two units whose zones of influence would extend into the roadless area. In addition, 0.33 mile of NFS road and 0.13 mile of temporary road are proposed within this roadless area. The affected acres represent about two percent of the North Kuiu Roadless Area.



### 3 Environment and Effects

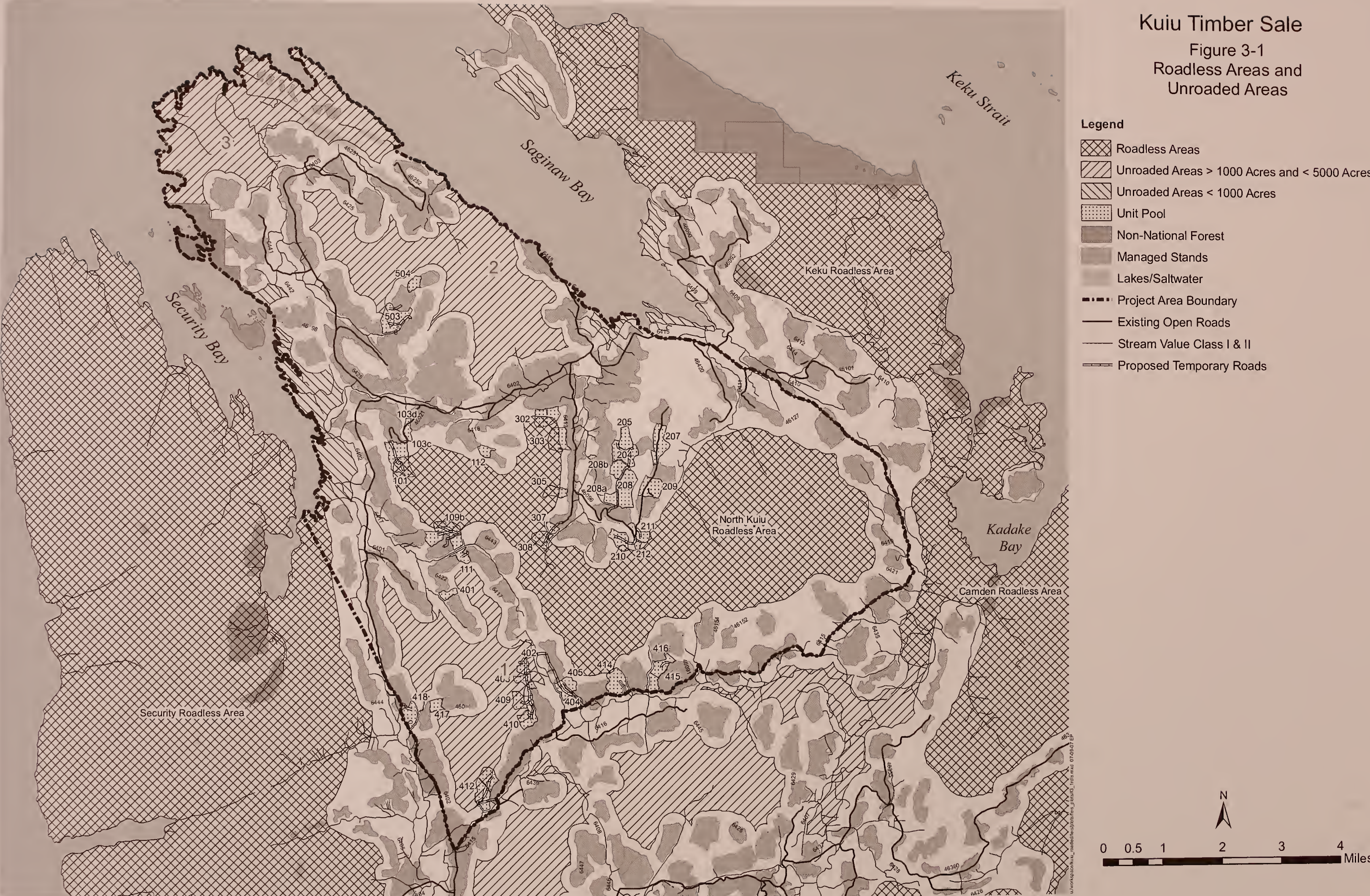
**Table 3-6. Roadless Area Values as identified in the Forest Plan SEIS (2003)**

Value	Status Identified in Forest Plan SEIS (2003)	Cumulative Effects after harvest
<b>Wilderness Potential</b>	The relative contribution of this area to the National Wilderness Preservation System would be very low because it is relatively small and is heavily influenced by development and activities on adjacent lands.	Unchanged after harvest of action alternatives.
<b>Opportunity for Solitude and Serenity</b>	The opportunity for solitude is low and the opportunity for primitive recreation is moderate in this roadless area.	Unchanged after harvest of action alternatives.
<b>Scenic Values</b>	The area is unmodified; however, its overall integrity is not pristine. The roadless area contains no landscapes considered distinctive for the character type from scenery perspective.	Unchanged after harvest of action alternatives.
<b>Recreational Values</b>	A very small portion of Kadake Creek, a Recreational River, lies in the northeast portion of the North Kuiu Roadless Area. There is little potential for outfitter and guide permits given the difficulty in accessing the area and the habitat conditions.  There are no designated recreation areas in the North Kuiu Roadless Area.	Unchanged after harvest of action alternatives.
<b>Biological Values</b>	The vegetation within the North Kuiu Roadless Area is typical of Southeast Alaska. Most of the area is covered with a mosaic pattern of temperate rainforest and muskeg.  There are 9,456 acres of mapped forest lands in the roadless area, approximately 90 percent of which is productive old-growth. Of the productive old-growth acres, approximately 5,932 acres, or 63 percent, are mapped as high-volume old-growth forest.	Forested old-growth stands would change to forested young stands. Amount would vary by alternative.  Reduced acres of productive old-growth. Varies by alternative.
<b>Cultural or Historical Values</b>	The North Kuiu Roadless Area lies within the traditional territory of the Kake Tlingit. There are no known cultural resource sites in the roadless area, although some subsistence use probably occurs in the area via access by existing roads that surround the Project Area.	Unchanged after harvest of action alternatives.
<b>Research Values</b>	The area contains no known features of special interest other than two bands of karst. The mapped karst resources encompass approximately 2,270 acres or 24 percent of the roadless area. The area does not include any Potential Research Natural Areas and has not been identified for any other scientific purpose.	Unchanged after harvest of action alternatives.





Kuiu Timber Sale  
Figure 3-1  
Roadless Areas and  
Unroaded Areas







**3.2.4.4 Alternative 1**

This alternative does not propose road construction or timber harvest nor does it propose to reduce the miles of open drivable roads. In all of the action alternatives a minimum of 8.2 miles of open road are proposed for closure. However, in Alternative 1 those roads would remain open and would continue to influence the quality of the roadless area through the sights and sounds of vehicle traffic at current levels.

**3.2.4.5 Alternative 2*****Direct and Indirect Effects***

There would be no direct effects on the North Kuiu Roadless Area in Alternative 2. This alternative does not propose any timber harvest or road construction in the North Kuiu Roadless Area.

A total of 11 acres in the roadless area would be affected from the 600-foot zone of influence around harvest units and the 1,200-foot zone of influence around proposed roads.

Indirect beneficial effects could occur through the closure of approximately 7.8 miles of roads that are currently open. Closure of these roads may reduce the influence of sights and sounds from vehicle use within the roadless area. These remote roads, however, are not used much beyond logging and hunting therefore the overall integrity of the roadless area would not change.

**3.2.4.6 Alternative 3**

A total loss of 67 acres due to timber harvest and 1 acre from construction of 0.06 mile of NFS road and 0.13 mile of temporary road is proposed within the North Kuiu Roadless Area in Alternative 3.

Portions of Units 109, 210, and 308 would be within the roadless area. The proposed harvest is clearcut for all three units and would be highly visible from areas within the roadless area. Due to the spacing of the units only one harvest unit would be visible at a time from within the roadless area. All effects would occur along the edge of the roadless area.

With the harvest of Unit 308, the roadless area would be narrowed to an approximately 1,518-foot strip between harvest units at its narrowest point; a corridor of this width would not be expected to restrict wildlife movement. Approximately 9,476 acres would be maintained in a roadless condition.

Unit 307 would be within 600 feet of the roadless area, and its zone of influence would extend into the edge of the area.

# 3 Environment and Effects

## ***Direct and Indirect Effects***

By building roads and harvesting in the roadless area this portion would no longer be roadless.

With the ongoing influence from roads and managed stands, the effects to the overall roadless area characteristics and values would be minimal. Opportunities for solitude would remain low, and the opportunity for primitive recreation would remain moderate.

A total of 257 acres in the roadless area would be affected, including the 600-foot zone of influence around harvest units and the 1,200-foot zone of influence around proposed roads.

Indirect beneficial effects could occur through the closure of approximately 8.0 miles of roads that are currently open. Closure of these roads may reduce the influence of sights and sounds from vehicle use within the roadless area. These remote roads, however, are not used much beyond logging and hunting therefore the overall integrity of the roadless area would not change.

### **3.2.4.7 Alternative 4**

Approximately 207 acres of roadless area would be removed due to timber harvest and 0.46 mile of road construction with this alternative. Approximately 0.33 mile of NFS road and 0.13 mile of temporary road would be built.

Portions of Units 101, 109, 210, 211, and 308 would be located within the edges of the roadless area; these acres would be clearcut harvested which would be highly visible from within the roadless area for several years. Units 305, 302, and 303 are helicopter units located almost entirely within the roadless boundary; however, they are scheduled for partial harvest and would not be as noticeable as the clearcut units. This alternative has 4 units (302, 303, 305, and 308) along the same drainage and it may be possible to see more than one harvest unit from a single position within the roadless area.

With the harvest of Unit 308, the roadless area between harvest units would be narrowed to a strip approximately 1,518 feet wide at its narrowest point; a corridor of this width would not be expected to restrict wildlife movement. Approximately 9,337 acres would be maintained in a roadless condition.

A total of 551 acres in the roadless area would be affected when the 600-foot zone of influence around harvest units and the 1,200-foot zone of influence around roads are applied around the proposed activities. Helicopter units do not receive the 600-foot zone of influence buffer according to the Forest Plan SEIS (p. 2-5).



Units 212 and 307 would be within 600 feet of the roadless area, extending their zones of influence into the edge of the roadless area.

## ***Direct and Indirect Effects***

The reduction of two percent of the roadless area is not expected to change the integrity of the North Kuiu Roadless Area.

The units are spread along more of the roadless area than in Alternatives 3 or 5, and this alternative has the greatest reduction in the total acres from the roadless area; therefore, this alternative would have the most effect on the roadless area. However, all the effects would occur along the edge and with the ongoing influence from existing roads and managed stands, the effects to the overall characteristics and values would be minimal. The opportunity for solitude would remain low, and the opportunity for primitive recreation would remain moderate.

Beneficial effects may result from the closure of approximately 10.5 miles of roads currently open around the roadless area. Closure of these roads may reduce the influence of sights and sounds from vehicle use within the roadless area. These remote roads, however, are not used much beyond logging and hunting therefore the overall integrity of the roadless area would not change.

### **3.2.4.8 Alternative 5**

Approximately 114 acres of roadless area would be removed due to timber harvest and 0.46 mile of road construction (approximately 0.33 mile of NFS road and 0.13 mile of temporary road) in the North Kuiu Roadless Area with this alternative.

Units 101, 109, 210, 211, and 308 would be located within the roadless area and would be clearcut. The harvested units would be highly visible from within the roadless area; however, because of the distance between the proposed units, only one harvest unit would be visible at a time.

About 9,430 acres would be maintained in a roadless condition.

A total of 397 acres of roadless area would be affected when the 600-foot zone of influence around harvest units and the 1,200-foot zone of influence around roads are applied around the proposed activities.

With the harvest of Unit 308, the roadless area would be narrowed to an approximately 1,518-foot strip between harvest units at its narrowest point; a corridor of this width would not be expected to restrict wildlife movement.

Units 212 and 307 would be within 600 feet of the roadless area, extending their zones of influence into the edge of the roadless area.

# 3 Environment and Effects

## Direct and Indirect Effects

The reduction of one percent of the roadless area is not expected to change the integrity of the North Kuiu Roadless Area.

All effects would occur along the edge of the roadless area. With the ongoing influence from roads and managed stands, the effects to the overall characteristics and values would be minimal. Opportunities for solitude would remain low, and the opportunity for primitive recreation moderate.

Beneficial effects could result from the closure of about 10.5 miles of roads that are currently open around the roadless area. Closure of these roads may reduce the influence of sights and sounds from vehicle use within the roadless area. These remote roads, however, are not used much beyond logging and hunting therefore the overall integrity of the roadless area would not change.

### 3.2.5 Effects on Unroaded Areas

Tables 3-7 to 3-10 list the direct and indirect effects of the proposed harvest by alternative on the two unroaded areas in which timber harvest or temporary road building is proposed. No table is shown for the third unroaded area with no proposed timber harvest or road construction in any action alternative. Locations of these unroaded areas are shown in Figure 3-1.

**Table 3-7. Direct Effects on Area 1 (Southern Unroaded Area 2,412 acres) by alternative**

Measure of Effects	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres harvested within units	0	0	68	149	149
Percent of unroaded area affected by units	0	0	3%	6%	6%
Acres <sup>a</sup> of temporary roads in unroaded areas	0	0	3.1	3.8	3.8
Unroaded Area 1 acres after harvest	2,412	2,412	2,341	2,259	2,259

<sup>a</sup> One mile of road construction (NFS or temporary) equals 4.85 acres.

**Table 3-8. Direct Effects on Area 2 (Middle Unroaded Area 3,302 acres) by alternative**

Measure of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres harvested within units	0	0	0	18	18
Percent of unroaded area affected by units	0	0	0	<1%	<1%
Acres of NFS and temporary roads in unroaded areas <sup>a</sup>	0	0	0	0.3	0.3
Unroaded Area 2 - acres after harvest	3,302	3,302	3,302	3,284	3,284

<sup>a</sup> One mile of road construction equals 4.85 acres.

### ***Direct and Indirect Effects***

Alternatives 1 would not affect unroaded areas less than 5,000 acres. Alternative 2 does not propose any timber harvest units or roads within unroaded areas and would not have any direct effects.

Alternative 3 proposes harvest of 68 acres (portions of Units 403, 409, and 410), and construction of 0.55 mile of NFS and 0.09 mile of temporary road within Unroaded Area 1. This area would be reduced by approximately three percent to 2,341 acres. No timber harvest is proposed within Unroaded Area 2 in Alternative 3.

Alternatives 4 and 5 propose harvest of 167 acres from Unroaded Areas 1 and 2 (Units 402, 403, 409, 410, 412, and 503) and construction of 0.55 mile of NFS road and 0.3 mile of temporary road within the unroaded areas.

Logging activities and traffic may be heard from Unroaded Area 1. These logging roads existed before this project was planned. The proposed activities would not change the integrity of the unroaded areas.

When the zones of influence from roads and timber harvest are considered, 6 acres of unroaded area in Alternative 2 and 292 acres of unroaded area in Alternative 3 would be affected. In Alternative 4, a total of 497 acres and in Alternative 5 a total of 498 acres of unroaded area would be affected.

Unroaded Area 1 would be reduced by approximately nineteen percent to 1,960 acres and Unroaded Area 2 would be reduced approximately one percent to 3,256 acres.



# 3 Environment and Effects

**Table 3-9. Indirect Effects on Area 1 (Southern Unroaded Area 2,412 acres) by alternative**

Measure of Effects	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of unroaded area affected <sup>a</sup>	0	0	292	451	452
Percent of unroaded area affected by units	0	<1%	12%	19%	19%
Acres in Unroaded Area 1 after harvest <sup>b</sup>	2,412	2,406	2,120	1,961	1,960

<sup>a</sup> Total includes 600-foot buffers around proposed timber harvest units and 1,200-foot buffers along proposed NFS and temporary roads within the roadless areas.

<sup>b</sup> All new NFS and temporary roads in roadless areas would be closed after harvest.

**Table 3-10. Indirect Effects on Area 2 (Middle Unroaded Area 3,302 acres) by alternative**

Measure of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of unroaded area affected <sup>a</sup>	0	0	0	46	46
Percent of unroaded area affected by units	0	0	0	1%	1%
Acres in Unroaded Area 2 after harvest <sup>b</sup>	3,302	3,302	3,302	3,256	3,256

<sup>a</sup> Total includes 600-foot buffers around proposed timber harvest units and 1,200-foot buffers along proposed NFS and temporary roads within the roadless areas.

<sup>b</sup> All new NFS and temporary roads in roadless areas would be closed after harvest.

## 3.2.6 Conclusion

In Alternatives 1 the roadless areas and unroaded areas would be unchanged. Alternative 2 would only affect the zone of influence, extending it slightly into the North Kuiu Roadless Area and one unroaded area. In Alternatives 3-5, the North Kuiu Roadless Area and two of the three unroaded areas would be reduced in size as shown in Tables 3-4 to 3-10. The North Kuiu Roadless Area would remain eligible for inclusion in the National Wilderness Preservation System, the unroaded area would still be over 1,000 acres, and values identified for the roadless areas within the Project Area would be retained.

### 3.2.6.1 Cumulative Effects

Cumulative effects on roadless areas were analyzed at the Forest Plan level. The decision was made to allocate roadless areas to either development or non-development LUDs. During the analysis for the Forest Plan the values of the roadless areas, their location, and their proximity to other roadless areas, especially Congressionally-designated Wilderness Areas, were used to determine which roadless areas would be allocated for development.

There are currently 9.6 million acres of land that are unroaded on the Tongass National Forest. Even with full implementation of activities allowed by the Forest Plan and no further Wilderness designation, 90 percent would remain roadless after 10 years, and 87 percent would remain roadless after 50 years (2003 Forest Plan SEIS ROD p. 12). The North Kuiu Roadless Area has been designated as a Timber LUD. None of the alternatives for the Kuiu Timber Sale project would affect the Wilderness eligibility of any roadless area.

It is reasonable to assume that timber harvest and associated road management will continue on Kuiu Island. Although in all action alternatives for the Kuiu project all new NFS roads would be closed after the completion of timber harvest activities, it is intended these roads would be used again in the future to access additional timber lands within the North Kuiu Roadless Area and in Unroaded Area #1. Cumulative effects for roadless areas include reasonable foreseeable future activities that overlap in the Project Area. Harvest of the remaining units from the Crane and Rowan Mountain Timber Sales EIS may affect approximately 284 acres of the Security Roadless Area. If harvest occurs this roadless area would still be eligible for Wilderness designation.

In addition, there are four units from the Crane Rowan Mountain Timber Sales EIS and 0.32 mile of proposed road construction in Unroaded Area 1. If harvested, it would remove 209 acres from the unroaded area . There is also 0.53 mile of proposed road construction in Unroaded Area 2. If this area were harvested, it would remove 100 acres from the unroaded area.

The current five-year plan and the events listed in the Catalog of Events for Kuiu Island are not expected to reduce the size of any of the roadless areas on Kuiu Island to less than 5,000 acres or make them ineligible for Wilderness consideration.

Since timber harvest and associated road building and major facilities are not allowed within non-development LUDs, at least 219,512 acres of these roadless areas on Kuiu Island would remain in a natural state for the life of the Forest Plan.

## 3.3 Issue 2 – Deer Habitat and Subsistence Use

### 3.3.1 Introduction

This issue relates to changes in deer habitat including wildlife travel corridors and deer winter range. It also includes the availability of deer for subsistence. Subsistence is an Alaska concern and a right protected by law. This evaluation addresses the potential effects of harvesting timber from the northern portion of Kuiu Island on the subsistence use of Sitka black-tailed deer.

#### 3.3.1.1 Units of Measure and Areas of Analysis

##### *Deer Habitat*

The effects of timber harvest on Sitka black-tailed deer habitat are analyzed by comparing changes in deer winter range (using the Forest Plan deer model) and by comparing the changes in POG and low elevation, high volume habitat by alternative.

Analysis for acres of deer winter range will include comparisons of changes between past, present and reasonably foreseeable future deer winter range by alternative. Important deer winter range is derived from quartiles which are based on the total acres of Habitat Suitability Indices (HSI) within the area of analysis, as directed in the May 25, 2005 Forest Supervisor's letter (Cole 2005). The WAA is the appropriate scale of analysis to develop HSI values for this project in order to compare the quartile analysis with the Forest Plan analysis.

Analysis for low elevation, high volume habitat will include comparisons of changes in acres of habitat between past, present and reasonably foreseeable future activities within WAA 5012 as this will allow a comprehensive accounting of all activities that may affect this habitat and yet be sensitive to potential effects of the proposed activities.

##### *Connectivity*

The removal of existing corridors due to proposed harvest have been analyzed. Harvest prescriptions that retain 50 percent or more of the original stand were developed to maintain wildlife habitat and travel corridors in several alternatives.

#### 3.3.1.2 Sitka Black-tailed Deer

The Sitka black-tailed deer was chosen as an MIS because it is an important game and subsistence species and is associated with old-growth forests. Deer habitat effects were calculated at the WAA level following Forest Supervisor direction (Cole 2005). Research



## Issue 2: Deer Habitat and Subsistence Use 3

conducted in Southeast Alaska indicates that high-volume, mature forests at lower elevations (800 feet or less) are needed to sustain deer populations during winters with deep snowfall (Schoen et al. 1985; Hanley and Rose 1987; Yeo and Peek 1992).

Recent work in Southeast Alaska by Doerr et al. (2005) reconfirmed deer were selecting high volume, low-elevation stands on south aspects during periods of heavy snowfall. Large, strong branches of mature stands intercept snow and maintain available forage. Productive, high volume stands of old-growth forests support the largest biomass of herb and shrub forage (Alaback 1982). Deer populations are impacted by the combination of deep snow winters and large amounts of winter range converted to second growth. Snow reduces or eliminates forage availability in young clearcuts. Closed canopy, young growth stands provide little forage in all seasons.

The Sitka black-tailed deer receives the highest sport hunting and subsistence use of all terrestrial species in Southeast Alaska. In ADF&G's Game Management Unit (GMU) 3, where Kuiu Island is located, deer are extremely important, as all of the communities in this region utilize this resource. Maintaining sufficient habitat to ensure the continued existence of this species is a priority for the Forest Service.

Early successional stands provide forage for deer during mild winters and the remaining seasons. Sitka black-tailed deer disperse (travel) through and use a variety of vegetation communities throughout the year, and no specific corridor requirements have been identified.

Every 20 to 40 years severe winters kill large numbers of deer. On the Petersburg Ranger District, this last occurred during the winters of 1969-72 (Brainard 1996). Cold weather with higher than normal persistent snowfall covered forage and caused deer populations to decline rapidly.

The era of heaviest logging occurred between 1970 and 1989 after the deer crash. Following these two decades, deer populations continued to climb and hunting was reopened in 1992. Deer herds, which crashed at the same time on the more heavily logged, roaded, and populated Prince of Wales Island, have returned in greater numbers than on Kuiu. We therefore assume that factors other than timber harvest alone are restricting the deer population on Kuiu from reaching historic levels. These additional factors include large populations of black bear and wolves.

### **3.3.1.3 Productive Old-growth (POG)**

The trees growing in productive old-growth exhibit a wide range of diameters, heights, and stand structure characteristics. This habitat supports high biological diversity. Table 3-12 displays total acres of POG harvested by alternative.

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**Table 3-11. Historic and current POG acres within WAA 5012 and the Project Area**

	1954 (historic condition)	2006 (existing condition)	Percent change from historic to existing condition
<b>WAA 5012 (145,634 acres)</b>	112,677	90,856	-19%
<b>Project Area (46,102 acres)</b>	40,978	30,586	-25%

**Table 3-12. Effects of the proposed alternatives on POG habitat<sup>a</sup> within the Project Area (acres remaining after harvest)**

Productive Old -growth	Historical Condition (1954)	Alt 1 (Current)	Alt 2	Alt 3	Alt 4	Alt 5
<b>Acres</b>	<b>40,978</b>	30,586	30,109	29,800	29,199	29,378
<b>High volume strata</b>		21,251	20,863	20,631	20,099	20,322
<b>Medium volume strata</b>		5,211	5,147	5,078	5,028	4,987
<b>Low volume strata</b>		650	632	629	620	620
<b>Percent current POG remaining after harvest</b>		100%	98%	97%	95%	96%
<b>Percent historic POG remaining after harvest</b>		75%	73%	73%	71%	72%

Note: Acres of volume strata harvested in each alternative does not equal the total unit size due to some “non” POG acres identified in GIS. These acres may be “holes” of unidentified volume in the GIS layer, or MMI-4 Soils (see the Soils and Geology section in this chapter).

#### 3.3.1.4 Low Elevation/High Volume POG

As discussed above, productive old-growth has different values based on volume and location. Low elevation/high volume old-growth is some of the most limited and important habitat for several old-growth dependent species including marten and goshawk and can serve as some of the best deer winter range.

Table 3-13 displays the total acres of POG below 800 feet harvested by alternative and harvest retention.

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**Table 3-13. Acres of High Volume POG below 800 feet Harvested within the Project Area**

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Total acres planned for harvest</b>	0	478	786	1,387	1,208
<b>Acres of high volume harvested below 800'</b>	0	101	82	259	156
<b>Acres of high volume harvested with 50% basal area retention below 800'</b>	0	60	57	112	0
<b>Acres of high volume clearcut below 800'</b>	0	41	25	147	156
<b>Percent of total acres of high volume harvested below 800'</b>	0	21%	10%	19%	13%
<b>Project Area</b>					
<b>Current Condition: 14,481 acres of POG below 800 feet</b>					
	Alt 2	Alt 3	Alt 4	Alt 5	
<b>Acres of Low Elevation/High Volume POG remaining in Project Area after harvest</b>	14,380	14,399	14,222	14,325	
<b>Percent acres of high volume remaining in Project Area after harvest</b>	99%	99%	98%	99%	
<b>WAA 5012</b>					
<b>Current Condition: 22,956 acres of POG below 800 feet</b>					
	Alt 2	Alt 3	Alt 4	Alt 5	
<b>Acres of Low Elevation/High Volume POG remaining in WAA after harvest</b>	22,637	22,547	21,913	22,259	
<b>Percent acres of high volume remaining in WAA after harvest</b>	99%	98%	95%	97%	

### 3.3.1.5 Effects of silvicultural treatments on deer habitat

Changes in deer habitat from timber harvest may increase populations in the short-run (20-30 years). However, as stands mature, habitat will decrease in value over time as a result of plant succession. Several



# 3 Environment and Effects

silvicultural treatments are available to maintain the habitat value for deer and other species over time. Pre-commercial thinning, commercial thinning, girdling, and pruning may help maintain the understory in these stands for a longer period of time.

Historic partial harvest treatments (50 percent retention) on the Tongass National Forest studied by Deal (2001) show that these treatments could provide deer food and habitat better than clearcut treatments. The light (1–25 percent basal area) and medium (26–50 percent basal area) cutting intensity plots did not differ significantly in community structure from the uncut plots. Partial harvest stands do not show the dramatic rise and fall of blueberry abundance in stands 20 to 80 years after clearcutting. Deal also noted that the decrease in blueberry abundance following partial harvest was small when compared to that of clearcutting. Community plant structures in the forests of Southeast Alaska appear to be resilient to moderate ranges of partial cutting (up to 50 percent basal area removal). Overall, partial cutting maintained diverse and abundant plant understories comparable to the plant communities typically found in old-growth stands (Deal 2001).

The action alternatives that prescribe uneven-aged silvicultural systems would retain a minimum of 50 percent of the basal area. These units would retain structure of the existing tree stand and help maintain wildlife values including travel corridors. Within the next 50 years, it is predicted that the deer habitat values in these stands would return to what they are presently (Deal and Tappeiner 2000, Deal 2001).

## 3.3.1.6 Deer Habitat Capability Model

An interagency deer habitat capability model (DeGayner 1996) was developed for the Forest Plan to evaluate the potential quality of winter habitat for Sitka black-tailed deer. The model was developed as a tool to compare the effects of action alternatives to no action, and assess future habitat suitability and capability of the WAA (Cole 2005). The model is a good tool to compare the changes in habitat between historic, current, and proposed actions and will be used as such in this report.

The model was updated to use an HSI of  $1.0 = 100$  deer/mi<sup>2</sup> as a multiplier based on work by Person et al. (1997). The model calculates habitat suitability indices (HSI) based on timber volume strata, aspect, elevation, and typical snowfall. High volume strata productive old-growth (POG) with south aspects, at lower elevation (below 800 ft.), and in low snowfall areas are assumed to provide the best deer winter range. This corresponds with recent findings in Doerr et al. (2005).

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For a more in-depth discussion on HSI calculations see the Wildlife Resource Report available in the planning record. For a discussion of the reliability of habitat capability models please refer to “The Role and Reliability of Habitat Capability Models” (DeGayner 1992, available in the Kuiu project planning record).

The interagency deer habitat capability model was run for WAA 5012 using the 100 deer/mi<sup>2</sup>= HSI 1.0 with no predation, as directed by the Forest Supervisor’s May 25, 2005 letter, the Annual Monitoring & Evaluation Report for FY 2000, and the MOU Agreement No. 00MOU-111001-026. The model does not differentiate between harvest prescriptions, treating all harvest as clearcut. Harvest conditions present in 1954 were used to give a general indication of the overall habitat quality within the WAA.

While all HSI values have the capability to support deer to some level, the HSI values are generally grouped into four levels or quartiles with the highest level (4) having the greatest ability to support deer. This quartile is referred to as important deer winter range in this report.

HSI numbers represent the best available information on deer habitat values and were compiled over the years (since deer modeling started on the Tongass in 1985) by deer specialists from the Alaska Department of Fish and Game, USDA Forest Service, US Fish and Wildlife Service and a panel of experts for the Forest Plan working cooperatively.

When habitat in the high quartile is harvested, it moves into a lower value, however, it may still be in the high quartile following harvest. Low elevation (below 800 feet) on south- and west-facing aspects with low snow levels will have an HSI of above 0.60 following harvest. That means that this habitat type will be available to deer during normal winter snowfall and produces a relatively high food nutritive value for deer. During winters with higher than normal snowfall these habitat types would not be expected to be available to deer, therefore, the model runs will overestimate the effects to deer during those high snowfall years. However, at the end of the stem exclusion stage (Oliver and Larson 1996) these values drop to 0.02 HSI (pole timber clearcuts 26-200 years old), which has a very low food nutritive value for deer.

Table 3-14 shows the HSI values as they are grouped within the quartiles for the historic condition, the current condition, and future (2046) condition of WAA 5012. The future condition in Table 3-14 is the current condition grown out 30 years and does not include proposed or reasonably foreseeable future activities.

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**Table 3-14. WAA 5012 deer habitat suitability indices – historic (1954), current (2006), and future (2046) condition**

Quartile	HSI values	1954 acres	2006 acres	Percent change	2046 acres <sup>b</sup>	Percent change from 1954
1	0.01 - 0.20	30,536	50,023	+39%	51,778	+41%
2	0.23 - 0.36	32,929	33,393	+1%	31,638	-4%
3	0.40 - 0.50	27,798	21,643	-22%	21,643	-22%
4 <sup>a</sup>	0.60 - 1.0	35,766	21,971	-39%	21,744	-40%

<sup>a</sup> The 4<sup>th</sup> quartile is considered important deer winter range.

<sup>b</sup> 2046 numbers are based on the current condition with no additional harvests.

#### 3.3.1.7 Important Deer Winter Range

As Table 3-15 shows, the acres of important deer winter range have been reduced approximately 39 percent (approximately 21,971 acres) as a result of previous timber harvest. Important deer winter range is defined as the HSI values in the highest quartile as determined from the historic (1954) condition. As the stands reach the stem exclusion age, which the interagency deer habitat capability model (DeGayner 1996) assumes will occur 26 years after harvest, deer habitat is reduced with the loss of browse. Many of the existing managed stands in the Project Area are over 30 years of age, so the modeled decline is assumed to have begun to occur. Those stands under 30 years of age will show a decline in deer habitat capability within a few years, according to the model. In this analysis the year 2046 is used to represent the future condition and includes the effects of the proposed timber harvest on future deer habitat capability in the WAA. Figure 3-2 displays the current deer HSI values by quartile in WAA 5012. Future declines in deer HSI values from the current condition predicted by the Forest Plan deer model are shown for the year 2046 in Figure 3-3.

Table 3-15 displays the direct effects of harvest by alternative on important deer winter range for WAA 5012. The results indicate that the decrease in current deer habitat capability in the WAA would range from less than one percent to approximately one percent, depending on the alternative selected. Habitat is relatively uniform across WAA 5012 and changes at the project level would be very



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similar to changes at the WAA level. When all existing and proposed managed stands have reached the stem exclusion stage by the year 2046, the model predicts that the cumulative decline in the WAA of important deer winter range would be 40 percent for all alternatives. This analysis does not include the potential benefits from thinning or partial harvest.

**Table 3-15. Direct effects of harvest on important deer winter range in WAA 5012 by alternative**

HSI value 0.6 – 1.0 (Historic acres 35,766)	Alternative				
	1	2	3	4	5
<b>Acres of important deer winter range</b>	21,971	21,843	21,841	21,660	21,725
<b>Percent change from present condition</b>		<1%	<1%	1%	1%
<b>Percent change from historic to current condition</b>	39%	39%	39%	39%	39%

### 3.3.1.8 Hunting

As discussed earlier, Sitka black-tailed deer inhabit the Kuiu Island portion of GMU 3 in low numbers. Severe back-to-back winters in the early 1970s reduced the herd numbers drastically and high black bear and wolf predation are likely keeping the deer herds from rebounding.

The deer harvest from Kuiu Island constitutes only three percent of the total harvest for GMU 3, with an average of 18 animals harvested yearly on an island of approximately 482,102 acres (ADF&G hunter surveys).

On average, 36 percent of the deer were harvested in GMU 3 by hunters using the road system, while 47 percent of the deer harvested were taken by hunters using a boat for access. The harvest method for the remaining 17 percent is unknown (ADF&G hunter surveys). The majority of animals taken from the road system were on the Mitkof, Zarembo, and Kupreanof (Portage Bay, Kake, and Lindenberg Peninsula) road systems.

On Kuiu Island the majority of boat-based hunting occurs in Port Camden, Kadake, and Rocky Pass. The majority road-based hunting occurs around Rowan Bay and the inland areas of the island. For more information on Sitka black-tailed deer hunting see the Subsistence portion of this section and the Subsistence Specialist Report available in the Kuiu Project planning record.

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## 3.3.1.9 Productive Old-growth and Connectivity

Landscape connectivity is the degree to which the landscape facilitates or impedes movement among habitat patches or the functional relationship among habitat patches (Tischendorf and Fahrig 2000). Connectivity does not necessarily mean that old-growth habitat areas need to be physically joined for all species, since many old-growth associated species across the Tongass can move or be carried across areas not in old-growth conditions (Forest Plan FEIS Part 1, p. 3-33). However, the Forest Plan also recognizes that for species with limited dispersal capabilities, such as lichens, fungi, bryophytes, plants, and small-bodied animals, the corridors may be the only linkage between habitats and need to function as breeding habitat. In these instances the habitat quality of these corridors is of utmost importance. Wider corridors are considered to be more effective at facilitating species' movements. A functioning corridor should be continuous, maintaining a minimum width along its entire length, and it must also contain suitable habitat for the species that are expected to move within it.

The definition of a corridor and its function can vary according to the species that use it. Forested muskeg may act as a corridor for mobile species with less affinity to old-growth forest, whereas roads may act as corridors for wolves during winter. Productive old-growth stands provide corridors for species, such as marten, that avoid open landscapes (Suring et al. 1992), and small-bodied animals that are not highly mobile (Pardini et al. 2005).

Old-growth forest habitat within the Project Area occurs in landscape patterns of naturally fragmented old-growth forest, muskeg, and forested wetlands. The majority of forest types in Southeast Alaska are not a continuous sea of "old growth"; many are in different stages of stand development and are unaffected by management activities (Oliver and Larson 1996, Kramer 1997).

Past timber harvest activities have resulted in additional fragmentation within some of the old-growth habitat areas. In contrast to fragmentation from natural disturbance events where broken or fallen trees remain to contribute to the overall functioning of the old-growth habitat, timber harvest removes much of the wood biomass from an area. This old-growth habitat fragmentation, combined with the proposed harvest for this project, may have adverse effects on some old-growth associated wildlife species. Too much fragmentation could make an area unsuitable for some old-growth associated species for several decades, and could affect the ability of some species to effectively travel between the remaining areas of old-growth habitat.

Although there are published studies that question the utility of corridors for species conservation, a review of these studies suggests

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that corridors can be effective, and proposes that inconclusive studies have turned out so because of design flaws (Beier and Noss 1998). The Forest Plan addresses landscape patterns including connectivity of old-growth patches by corridors (Forest Plan Final EIS Part 1, p. 3-20). Two important landscape elements, beach and estuary fringe and riparian areas, have special importance as components of old-growth forest and provide unique wildlife habitats as well as serving as wildlife travel corridors. The Tongass has established 1,000-foot buffers along beach and estuary fringes and 100-foot minimum buffers for fish streams (buffer widths vary on riparian areas by stream process groups) where no programmed timber harvest is allowed.

Travel corridors exist between proposed timber harvest units for this project. Depending upon the alternative selected by the Forest Supervisor, some corridors would remain following harvest and others would be removed. In the units where silviculture prescriptions prescribe 50 percent basal area retention, usable corridors would be maintained (See Unit Cards in Appendix B).

### **3.3.3 Direct and Indirect Effects by Alternative**

#### **3.3.3.1 Alternative 1**

This alternative proposes no new activities in the Project Area. Wildlife habitat may decline in current second-growth stands as they develop and the understory forage becomes shaded. There would be no change in the current road network.

No POG would be reduced. Old-growth stands would continue to support wildlife at their current capability at least until the next planning cycle. This area is within a Timber Production LUD and it is assumed that it will be harvested at some future time.

Important deer winter range has been reduced by 39 percent since 1954 in WAA 5012. No additional acres of deer habitat would be harvested with the implementation of this alternative. When previously harvested areas develop to the point of stem exclusion, thinning or pruning could be applied to increase forage productivity.

#### **3.3.3.2 Alternative 2**

Alternative 2 proposes harvest on 478 acres. Harvest prescriptions include 280 acres of partial harvest with 50 percent basal area retention and 197 acres of clearcut.

Alternative 2 would harvest 388 acres of high volume POG, 64 acres of medium volume, and 18 acres of low volume. Of this harvested volume, approximately 280 acres would retain 50 percent of the basal



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area. This would provide habitat forage habitat for deer. Approximately 197 acres would be clearcut.

Alternative 2 and Alternative 3 would retain the most low elevation, high volume habitat.

Partial harvest of 60 acres of low elevation, high volume forest would retain valuable habitat structures within the harvested areas, including some canopy cover and increased forage value for deer habitat.

The clearcut harvest of 41 acres of low elevation, high volume forest would remove the coarse structure from the stands that may take in excess of 100-150 years to develop.

According to deer model predictions, a reduction of less than one percent (128 acres) of the historic important deer winter range may occur with the implementation of this alternative. The high number of acres of important deer winter range remaining after implementation (21,843) and the low hunting success on Kuiu (average 18 deer/year) indicates that WAA 5012 could support more deer than are currently present and that the proposed reduction in habitat should not affect deer populations.

Clearcutting Units 103, 208a, 208b and part of 207 will not remove the travel corridors that exist from high to low elevation; however, it will reduce the corridor width. Clearcutting Units 416 and 417 will remove possible corridor between existing units but will not have an affect on corridors from high to low elevation. The remaining proposed units (109b, 111, 207, 209, 404, 405 and 415) are located in travel corridors where deer travel from high to lower elevations. Within these stands, three harvest prescriptions, leaving a minimum of 50 percent of the basal area following harvest, will help maintain the travel corridors.

Deer would unlikely be adversely affected by this alternative since 280 acres (59 percent of the acres harvested) are in partial harvest prescriptions that retain 50 percent of the basal area, which would help maintain a natural forest mosaic and retain habitat. Road closures would reduce hunter accessibility. The Forest Plan deer model reports all units as harvested by an even-aged prescription, so the model would overestimate the number of acres of high value habitat removed using partial harvest.

### 3.3.3.3 Alternative 3

Alternative 3 proposes harvest on 786 acres. Harvest prescriptions include 377 acres of partial harvest with 50 percent basal area retention and 409 acres of clearcut harvest.

Alternative 3 would harvest 620 acres of high volume, 133 acres of medium volume, and 21 acres of the low volume. Of this harvested





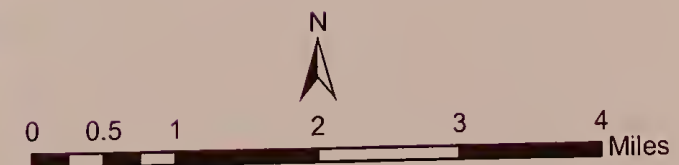
# Kuiu Timber Sale

Figure 3-2

Deer Winter Range Current Condition

## Legend

- HSI .01-.2
- HSI .23-.36
- HSI .4-.5
- High Value HSI .6-1
- Non-National Forest
- Lakes/Saltwater
- Existing Open Roads
- Project Area Boundary
- 500ft Contour Interval
- Stream Value Class I & II







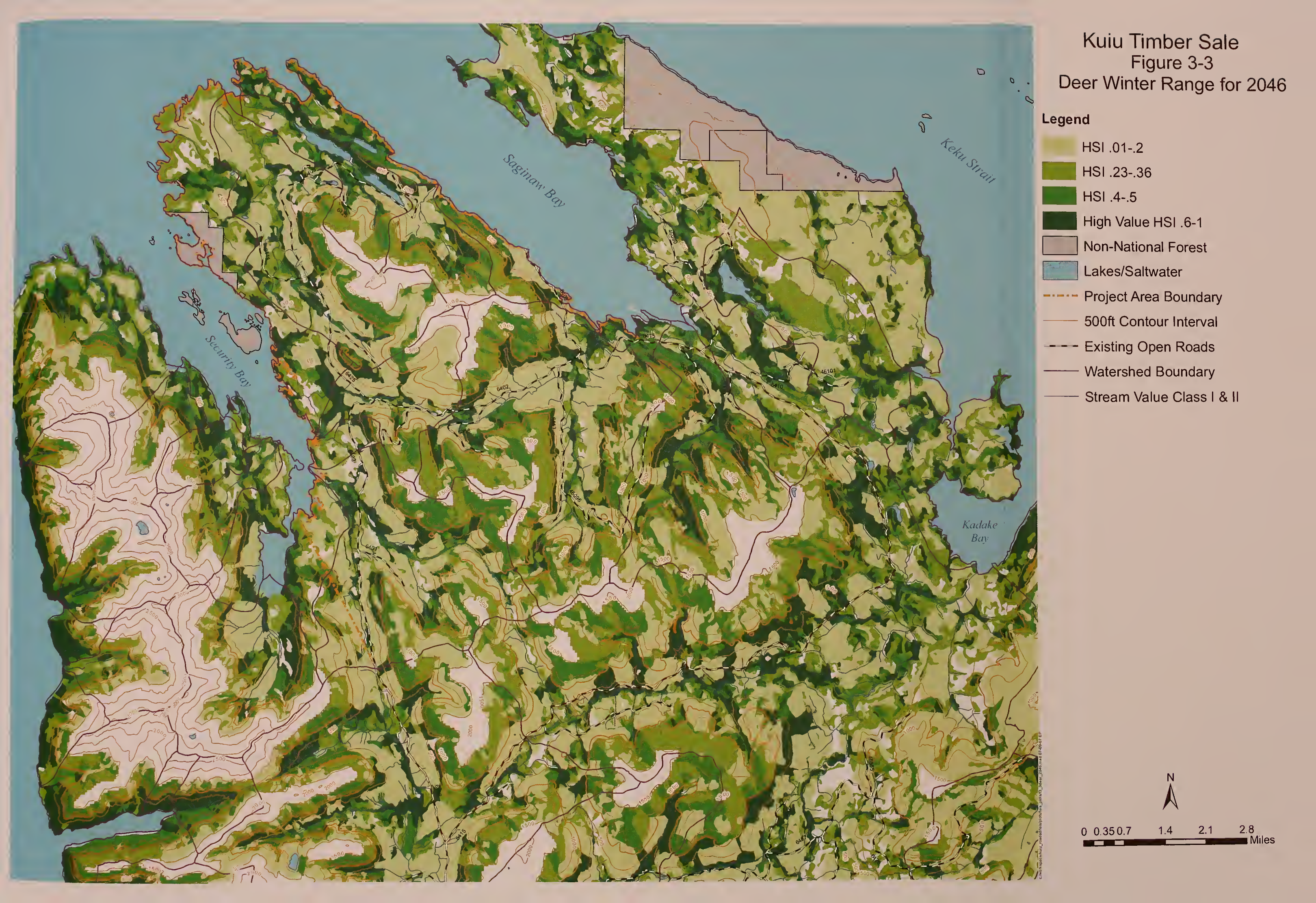
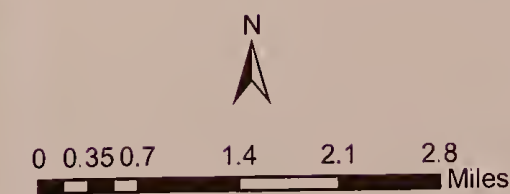




Kuiu Timber Sale  
Figure 3-3  
Deer Winter Range for 2046

Legend

- HSI .01-.2
- HSI .23-.36
- HSI .4-.5
- High Value HSI .6-1
- Non-National Forest
- Lakes/Saltwater
- Project Area Boundary
- 500ft Contour Interval
- Existing Open Roads
- Watershed Boundary
- Stream Value Class I & II







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volume approximately 377 acres would retain 50 percent of the basal area. This would provide forage habitat for deer. Approximately 409 acres would be clearcut.

Alternative 3 would be similar to Alternative 2 in that both alternatives would retain the most low elevation, high volume habitat.

Partial harvest of 57 acres of low elevation, high volume forest would retain valuable habitat structures within the harvested areas, such as canopy cover and forage value for deer habitat.

The clearcut harvest of 25 acres of low elevation, high volume forest would remove the coarse structure from the stands and may take in excess of 100-150 years to reestablish.

According to deer model predictions, a reduction of less than 1 percent (130 acres) of the historic important deer winter range would occur with the implementation of this alternative. These reductions in habitat are not expected to affect deer populations within WAA 5012. The high number of acres of important deer winter range remaining after implementation (21,841) and the low hunting success on Kuiu (average 18 deer/year) indicates that the WAA could support more deer than are currently present, and a reduction in habitat should not reduce deer populations.

This alternative proposes the harvest of a portion of Units 109 and 207, and all of Units 205, 208, 210, 307, 308, 403, 410 and 416 using even-aged prescription. The harvest of these units will not remove wildlife travel corridors between high and low elevation. As in Alternative 2, Unit 416 will remove a corridor between existing units but it maintains the corridor between high and low elevation.

The remaining units will be harvested using three different prescriptions, all leaving 50 percent of the basal area following harvest to help mediate this concern. Units 109, 112, 207, 209, 404 and 405 will occur within the travel corridors between high and low elevation. Unit 417, like 416, removes a corridor between existing units but maintains the high to low elevation travel corridor.

Approximately 377 acres (48 percent of the acres harvested) are in partial harvest prescriptions that would retain 50 percent of the basal area, which would help maintain a natural forest mosaic and retain habitat for all the above species. Road closures would reduce hunter accessibility. The deer model reports all units as harvested by an even-aged prescription so the results would be even less with a 50 percent retention prescription.

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## 3.3.3.4 Alternative 4

Alternative 4 proposes harvest on 1,387 acres. Harvest prescriptions include 399 acres of partial harvest with 50 percent basal area retention and 1,026 acres of clearcut.

Alternative 4 would harvest 1,152 acres of high volume, 183 acres of medium volume, and 30 acres of low volume. Of this harvested volume approximately 362 acres would retain 50 percent of the basal area. This would provide forage habitat for deer. Approximately 1,025 acres would be clearcut.

Alternative 4 would harvest the most acres of low elevation, high volume POG habitat (259 acres).

Partial harvest of 112 acres of low elevation, high volume forest would retain valuable habitat structures within the harvested areas, such as some canopy cover and forage value for deer habitat.

The clearcut harvest of 147 acres of low elevation, high volume forest would remove the coarse structure from the stands and may take in excess of 100-150 years to reestablish.

According to deer model predictions, a reduction of approximately one percent (311 acres) of the important deer winter range would occur with the implementation of this alternative. This reduction in habitat is not expected to affect deer populations within WAA 5012. The high number of acres of important deer winter range remaining after implementation (21,660) and the low hunting success on Kuiu (average 18 deer/year) indicate that the WAA could support more deer than currently present and a reduction in habitat should not reduce deer populations.

The clearcut harvest of 1,387 acres in Units 101, 109, 112, 208, 210, 211, 212, 307, 308, 401, 402, 403, 404, 405, 409, 410, 412, 416, 418, 503 and 504 will partially remove travel corridors between high and low elevation. The harvest of Units 109, 111, 112, 401, 404 and 405 will completely remove travel corridors between high and low elevation while harvest of Units 416, 418, 503 and 504 will remove corridors between existing units.

The remaining units will be harvested using three different prescriptions, all leaving 50 percent basal area to help mediate this concern. The partial harvest of Units 207, 209, 414 and 415 will help maintain these areas as a viable corridor.

Of the action alternatives, this one would impact deer habitat the greatest since it would harvest the most forest and remove the most habitat. However, while there may be some local impacts to



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individuals within the population, the population would not be adversely affected.

### **3.3.3.5 Alternative 5**

Alternative 5 proposes harvest of 1,208 acres, all of which would be clearcut harvested.

Alternative 5 would harvest 929 acres of high volume, 224 acres of medium volume, and 30 acres of low volume. Of this harvested volume none would retain 50 percent of the basal area. All 1,208 acres would be clearcut.

Alternative 5 would clearcut harvest the most low elevation, high volume POG habitat (156 acres) and would not partially harvest any units. The coarse structure removed from the stands may take in excess of 100-150 years to reestablish.

According to deer model predictions, a reduction of approximately one percent (246 acres) of the important deer winter range would occur with the implementation of this alternative. These reductions in habitat are not expected to affect deer populations within WAA 5012. The high number of acres of important deer winter range remaining after implementation (21,725) and the low hunting success on Kuiu (average 18 deer/year) indicate that the WAA could support more deer than are currently present and a reduction to habitat should not reduce deer populations.

Harvesting Units 109, 111, 112, 207, 209, 401, 404 and 405 would remove travel corridors between high and low elevation, including Units 207 and 209 which are identified as important travel corridors in Alternative 4. Harvesting Unit 208, 412, 418 and 503 will reduce the travel corridors between high and low elevation while the harvest of Units 112, 416, 417 and 504 will remove corridors between existing units.

### **3.3.3.6 Past, Present, and Reasonably Foreseeable Future**

Timber harvest has occurred on much of the northern portion of Kuiu Island. This harvest was mostly to fill the needs of the long-term sale program starting in 1968. Kuiu Island was an alternate area for the Alaska Pulp Corporation long-term sale. The Kuiu Catalog of Events is located in the planning record and was consulted for determining cumulative effects. All timber harvest in WAA 5012 from the four acres harvested in 1931 to the planned, but unharvested units from Crane and Rowan Mountain Timber Sales and Threemile Timber Sale EISs have been accounted for in this analysis. All non-harvest activities were reviewed for possible impacts to wildlife species as well.

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Most of the previously harvested units have been treated once with silvicultural thinning. Wildlife would benefit from the thinning, girdling and/or pruning treatment to approximately 1,475 acres of 39-year-old second-growth stands within the Saginaw watershed. The IDT has visited these units and has determined that it would be beneficial to prescribe treatments to extend the usefulness of the deer and bear habitat. The judicious use of silvicultural treatments can extend productive time that harvested units provide suitable habitat.

#### ***Planned Projects***

For the Kuiu Timber Sale action alternatives, an individual timber sale or more than one sale over a period of several years, may occur.

It is reasonable to assume that timber harvest and associated road management will continue on Kuiu Island. The current Tongass timber sale schedule lists other timber sale projects:

- Crane and Rowan Mountain Timber Sales ROD was signed June 1998 and is considered in cumulative effects. Approximately 482 and 745 acres were considered as reasonable future foreseeable harvest within the Project Area and WAA 5012, respectively (refer to Changes Between DEIS and EIS section in Chapter 2).
- Threemile Timber Sale ROD was signed in April of 2004. The Threemile Timber Sale will harvest approximately 19.5 mmbf on approximately 665 acres and construct 4.2 miles of new NFS roads and 4.2 miles of temporary roads.

#### ***Cumulative Effects***

The cumulative effects analysis area for POG and for low elevation, high volume POG is WAA 5012. The WAA was selected as the analysis landscape scale since it is the same scale used for analysis for most MIS and can be used to compare to Forest Plan data.

Historically, 112,677 acres of total POG were available in WAA 5012. That amount has been reduced to 90,856 acres. This is a 19 percent reduction (Table 3-11). The action alternatives would reduce POG in the WAA by two percent for Alternative 2, three percent for Alternative 3, five percent for Alternative 4 and four percent for Alternative 5 (Table 3-12). The Crane and Rowan Mountain Timber Sales EIS prescribed the removal of additional acres for the WAA. Approximately 659 acres of POG, of which 102 acres are low elevation, high volume POG, could be harvested within WAA 5012.



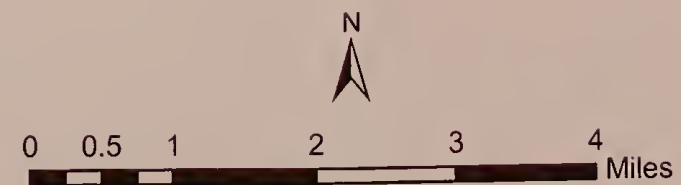


# Kuiu Timber Sale

Figure 3-4  
Coarse Canopy Forest

## Legend

- Forest Plan OGR
- Productive Old-Growth
- Coarse Canopy
- Unit Pool
- Managed Stands
- Non-National Forest
- Lakes/Saltwater
- Roads in Storage (Closed)
- Decommissioned Roads
- Existing Open Roads
- Project Area Boundary
- 500ft Contour Interval
- 800ft Contour Interval
- Stream Value Class I & II







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Cumulatively, this would reduce POG in the WAA by less than one percent. The Forest Plan predicts that 54 percent of the 1954 POG habitat will remain at the end of the rotation in WAA 5012 (Forest Plan, FEIS p. 3-387). Analysis shows that WAA 5012 is well within this predicted decline.

Past management activities in WAA 5012 have reduced important deer winter range by 39 percent. All action alternatives would reduce important deer winter range from the historic condition by less than to one percent. The reasonably foreseeable harvest of remaining units in the Crane and Rowan Mountain Timber Sales EIS would further reduce the important deer winter range in WAA 5012 by an additional 227 acres (all of which would be harvested by helicopter with 50 percent of the stand's basal area remaining), bringing the cumulative reduction of high value winter range to between 39 percent for the No-Action Alternative and 40 percent for Alternative 4.

The Forest Plan predicts that 56 percent of the deer habitat capability would remain at the end of the rotation (2095) (Forest Plan FEIS Part 1, p. 3-373) in WAA 5012. These changes assume all harvest is even-aged. The results should be somewhat less for Alternatives 2, 3, and 4 because of the partial harvest prescriptions proposed.

The scoping for this project found that there is concern that timber harvest on private lands on both Kuiu and Kupreanof Islands has had, or may have, harmful effects to deer populations on Kuiu Island. There are very few acres of State or private lands on Kuiu Island. State lands include the State Marine Park in Security Bay and two town sites in Rowan Bay and No Name Bay. There may be clearing of the Rowan Bay site in the future if the State sells lands for a town site. The No Name Bay site is part of the over-selection and is low on the priority list of lands the State will select. Harvest will most likely not occur on the remaining State lands because of the nature of the lands withdrawn.

The Sealaska Corporation owns lands on the northern portion of Kuiu in VCU 398. At this time, no harvest has occurred on these lands. These are small acreages and are not expected to have much impact to wildlife.

The harvest of private lands on Kupreanof Island around the village of Kake is extensive. The Native Corporation completing this harvest has followed the State Forestry Practices Act and has cut what is available. This large harvest area has had major impacts to deer on Kupreanof Island but probably has had little effect to Kuiu populations



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## 3.3.4 Subsistence

With the passage of the Alaska National Interest Lands Conservation Act (ANILCA), the U.S. Congress recognized the importance of subsistence resource gathering to the rural communities of Alaska. ANILCA (16 USC 31130) defines subsistence as: “The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade.”

ANILCA provides for the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on public lands. It also set legislation that customary and traditional subsistence uses of renewable resources shall be the priority consumptive use of all such resources on the public lands of Alaska. Non-rural residents are not provided a preference for the taking of fish and wildlife on public lands.

Kake residents probably use Kuiu Island more than residents of any other community in Southeast Alaska. They fish, hunt deer and waterfowl, and gather seaweed, medicinal plants, shellfish, and berries. Petersburg and Wrangell residents make limited use of the Project Area and WAA 5012 for hunting deer and commercial fishing. Other nearby rural communities with reported fish and wildlife gathering activities in the Project Area and WAA 5012 include Port Protection, Point Baker, Port Alexander, and Meyers Chuck. Detailed information on these other communities can be found in the Subsistence Resource Report available in the planning record.

## 3.3.5 Community Subsistence Profiles

### 3.3.5.1 Kake

Kake residents harvest a variety of subsistence resources, documented in detail through the Tongass Resource Use Cooperative Study (TRUCS) (Kruse and Frazer 1988). Households in Kake reported they consume an average of 160 pounds of meat and fish annually. The subsistence resources most often used are salmon, other finfish and deer. In terms of pounds of edible harvest, fish constituted 48 percent of the 1996 total harvest (24 percent salmon, 24 percent other fish), large mammals 29 percent, marine invertebrates 12 percent, plants five percent, and birds less than one percent, and five percent unknown.

There is a long history of use of the waters near the Project Area by Kake residents. The saltwater is heavily used by commercial, sport, and subsistence users. The stream locally known as Fall Dog Creek is adjacent to the Project Area and is heavily used by Kake residents for subsistence fishing and gathering when they are traveling to the Bay of Pillars. Most of the large streams on Kuiu Island are used by Kake

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residents, especially in the Rocky Pass area because of the easy access, even in inclement weather. These areas are used for hunting, fishing, and gathering seaweed. Additional information about Kake regarding employment, income, population, and ethnicity can be found in the Socioeconomic Specialist report available in the planning record.

### **3.3.5.2 Other Community Use**

Residents of Port Protection and Point Baker generally use the southern portion of Kuiu Island and the lower reaches of Keku Strait, but the Project Area gets some use. Meyers Chuck, Petersburg and Wrangell residents make limited use of the Project Area for subsistence purposes.

### **3.3.6 Types and Amounts of Resources Gathered**

Summary subsistence harvest information is presented in Table 3-16. This table displays the total harvest of terrestrial game species from Kuiu Island for regulatory years 1984-2003. Between 1975 and 1991 Kuiu Island was closed for deer hunting. Most of the subsistence harvest on Kuiu Island was by Petersburg and Kake residents. The Sitka black-tailed deer is by far the most important species listed in this table, followed by black bear and moose. Trapping numbers for marten and beaver are relatively small and variable. Local patterns are discussed briefly below. The primary subsistence resource of potential concern is deer, which will be discussed in more detail.

#### **3.3.6.1 Direct Effects of the Alternatives**

Detailed analysis of effects of the proposed activities by alternative for Sitka black-tailed deer are found earlier in this section and other wildlife species can be found by species under the Wildlife section of this chapter.

#### ***Sitka Black-tailed Deer***

The subsistence evaluation of deer is based on a comparison of supply and demand. The deer habitat capability model was used in this analysis for the habitat within WAA 5012. If the demand for deer exceeds the supply, then a significant possibility of a significant restriction of a subsistence resource exists.

On Kuiu Island, the subsistence use of WAA 5012 is limited and variable. In past years, Petersburg and Kake residents heavily hunted Kuiu Island for deer. As a result of severe winters the deer population crashed in the early 1970s and the hunting season on Kuiu was closed from 1975 to 1991. Since 1992 Kuiu Island has been open to hunting with a two-buck bag limit. During the long hunting closure on Kuiu, subsistence hunters shifted to Admiralty Island (especially WAAs 3938-3940) and, to a lesser extent, the northern part of Prince of Wales Island, as well as the nearby mainland. When hunting was again

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**Table 3-16. Subsistence harvest of important game species on Kuiu Island**

Year	Beaver	Otter	Wolf	Wolverine	Deer	Marten	Black Bear <sup>1</sup>	Moose
1984	17	40	0	0	N/A	N/A	51	N/A
1985	18	19	4	0	N/A	N/A	66	N/A
1986	14	5	1	0	N/A	N/A	89	N/A
1987	9	3	4	0	N/A	N/A	84	N/A
1988	11	3	3	0	N/A	N/A	118	N/A
1989	2	0	3	0	N/A	N/A	109	N/A
1990	0	0	0	1	N/A	N/A	78	N/A
1991	6	0	7	0	N/A	N/A	77	1
1992	8	0	3	0	N/A	N/A	88	0
1993	0	11	16	0	11	23	121	0
1994	9	9	1	0	24	0	111	0
1995	0	7	8	0	25	51	124	0
1996	0	6	9	0	22	21	131	0
1997	0	7	5	0	13	35	165	0
1998	0	0	8	0	29	15	161	0
1999	0	0	10	0	18	0	168	0
2000	1	0	7	0	27	17	166	0
2001	0	0	3	0	8	0	105	0
2002	0	0	13	0	17	0	112	1
2003	0	0	4	0	7	10	121	0
2004	0	0	0	0	N/A	0	114	0
<b>Average</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>&lt;1</b>	<b>19</b>	<b>14</b>	<b>112</b>	<b>&lt;1</b>

N/A = Harvest records were not available.

Source: Meucci 2005

<sup>1</sup> Numbers include sport hunting harvest.



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allowed, the low numbers of deer and their availability did not persuade hunters to return to Kuiu Island. The deer population is slowly growing, but it is not advantageous enough at this time for most hunters to spend their time or energy hunting on Kuiu Island.

Subsistence use areas and the levels of harvest were estimated from a variety of sources. Data compiled from the ADF&G shows the average number of deer harvested on Kuiu Island since 1992 when the season reopened was 18, with a range of 7 to 29 animals harvested. In contrast, the average for Kupreanof is 174, with a range of 90 to 373. On Mitkof Island the average is 139 with a range of 64 to 232 during the same period.

ADF&G estimated hunter demand on Kuiu Island to be 68 deer, based on estimated annual harvest during the years 1960-1968. These years represent the demand before the deer population crash in the early 1970s. The minimum number of deer needed to support that demand indefinitely is 10 times that demand, or 680 deer. This is well within the capability of the WAA and is therefore considered a sustainable harvest.

However, testimony from the Crane and Rowan Mountain Timber Sales EIS, Threemile Timber Sale EIS, and the Kuiu Timber Sale EIS subsistence hearings indicated that the subsistence hunters did not always accurately report their location when they were successful at hunting deer. So while both information from the Forest Plan "Deer Harvest Map" and Chapter 3: Subsistence and Communities as well as Tongass Resource Use Cooperative Study (TRUCS) (Kruse and Frazer 1988) has been used, it is recognized that this information may not be entirely accurate. The following information reflects the testimonies of subsistence hunters from Kake:

- The Organized Village of Kake feels the 1960s deer use figures (from ADF&G) substantially underestimate what the use was in those years, and thus this carries over into underestimating current and future demand. Several declarations from Kake residents attest to their remembrance of deer taken from Kuiu during the 1950s and 1960s. These residents recall that more than 30 deer were taken by them or their families alone, and others estimate around 80 for an extended family to more than 100 for Kake people.
- Kake residents have pointed out that their recent (since 1975) reliance on Admiralty Island for deer hunting is not their preference, and that as the Kuiu herds increase more of their hunting will shift back to Kuiu Island. Kake residents on average (based 1993 to 1995) take about 250 deer annually (TLMP Revision FEIS, Appendix H, p. H-76, based on 75 percent of their harvest being 185 deer). If all of these deer were harvested from Kuiu Island the minimum number of deer needed to support that

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demand would be 2,500. Table 3-17 shows that WAA 5012 alone would be able to meet this demand in all alternatives if the deer density were at the carrying capacity. At the present time, the deer numbers are still recovering and the recovery is slow due to the high black bear and wolf predation on the island.

All action alternatives would result in a reduction of deer habitat capability. Alternatives 2 and 3 would result in a less than one percent decline in deer habitat capability. Alternatives 4 and 5 would result in a one percent decline in deer habitat capability in WAA 5012. WAA 5012 has the habitat capability sufficient to meet the State of Alaska’s population objectives (680 deer) including the hunter demand for the people of Kake (2,500 deer).

Table 3-17. Deer habitat capability (deer/mi<sup>2</sup>) for WAA 5012 by alternative

	1954	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Deer density (deer/mi <sup>2</sup> ) to support wolf and hunter demand for WAA 5012	37	29	29	29	29	29
Deer density (deer/mi <sup>2</sup> ) to support wolf and hunter demand for Kuiu Biogeographic Province	37	34	34	34	34	34
% Change from current condition			<1%	<1%	1%	1%

## Moose

ADF&G harvest records show that moose is not an important subsistence species on Kuiu Island because only two moose have been harvested in the past 15 years.

## Black Bear

The black bear is an important subsistence animal in Southeast Alaska. In GMU 3, where Kuiu Island is located, the bear is important to resident and nonresident hunters. There is concern about the Kuiu Island black bear population and what will happen if timber harvest continues on the island at its projected rate. Outfitter/Guides are now advertising their hunts on Kuiu Island as a “World Class Trophy Hunt” and are able to command higher prices because of the large bear population and the large size of the individual animals.

Concern was expressed over the potential competition between subsistence hunters and nonresident hunters. As a result, the State of

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Alaska limited nonresident bear harvest on Kuiu Island to 120 bear per year in 2001.

Black bears use a variety of habitat types for forage, denning, and cover. Saltwater and freshwater influence zones are of ecological importance to bear. None of the alternatives are expected to result in any restrictions to subsistence harvest of black bear (see the Recreation section in this chapter).

### ***Furbearers***

Past subsistence hearings have indicated that most marten trapping is by local area residents. Very few people travel to Kuiu Island to hunt or trap from other communities in Southeast Alaska.

No significant subsistence restrictions on marten are anticipated from any of the action alternatives. See the Management Indicator Species section in this chapter for more information on harvest within units of high value marten habitat.

### ***Fish and Shellfish***

Application of Forest Plan riparian standards and guidelines and road construction Best Management Practices (BMPs) would be expected to minimize the risk of impact to fish habitat and fish populations. Stream buffers are specified for all proposed harvest units. Refer to the unit cards in Appendix B for descriptions of stream buffers and water quality BMPs. All action alternatives would result in road crossings across fish streams; however, the effects to fish populations from these proposed activities should be minor. Refer to the Fisheries section of this chapter for additional information on stream crossings proposed for this project.

There are no expected measurable effects on shellfish populations for all action alternatives. With the exception of the use of the Saginaw or Rowan Bay LTFs, all proposed activities are located in the uplands, away from shellfish populations. Use of either LTF would present the greatest potential for adverse impacts to shellfish, but mitigation measures specified in the permits for the LTF should reduce these potential effects.

Subsistence fishing and shellfish harvesting in or near the Project Area are not likely to be affected by the proposed activities for this project. As discussed above, the distribution and abundance of these resources should not change as a result of this project, and any changes in access or competition for these resources should be minor and of limited duration.



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## ***Upland Birds and Waterfowl***

Upland game birds, such as grouse, are found throughout the Project Area.

Waterfowl nesting and breeding areas are adjacent to the Project Area. Saginaw, Security, and Rowan Bays all provide resting, nesting, and feeding habitat for waterfowl throughout the year. Rocky Pass, to the east of the Project Area, provides excellent habitat for waterfowl.

Upland birds do not seem to be affected by increased road access. The amount of upland bird habitat unaffected by the proposed projects will support the current populations. Beach, estuary, and riparian buffers would retain habitat for waterfowl. The Forest Plan Standards and Guidelines for waterfowl buffers would be applied if necessary to protect nesting or breeding waterfowl.

No measurable effects on bird populations are expected from any of the action alternatives.

Upland birds and waterfowl are a small percentage of the foods harvested by subsistence users. The activities proposed for this project should not change the distribution, abundance, or use of upland birds or waterfowl in the Project Area.

## ***Marine Mammals***

Forest Plan Standards and Guidelines for protection of marine mammal habitat would be followed and none of the alternatives is expected to negatively impact marine mammals. No significant possibility of a significant restriction to the subsistence use of marine mammals is expected under any alternative.

## ***Food Plants***

Subsistence plant foods consist of a variety of species. Some of the most sought after types include kelp, seaweed, goose tongue, mushrooms, and berries. Roads and previous timber harvest areas within the Project Area are excellent berry harvest locations since many berry species thrive on open, exposed slopes (Alaback 1982). However, since Project Area roads are not connected to any community, little competition for plant foods is anticipated. None of the alternatives is expected to negatively affect subsistence plant gathering for food. Reasonably foreseeable effects of the action alternatives on the abundance and distribution of food plants would be minimal.

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### **3.3.6.2 Access**

The primary modes of access include boats, foot travel, cars, and all-terrain vehicles. The existing road system on Kuiu Island does not connect directly to any other road systems or the Alaska State Ferry System, so only minimal impacts due to road use are expected.

Access by boat and foot would not be restricted by any of the action alternatives. Access to areas along the beach fringe would not change. Road construction and reconditioning of existing roads may temporarily increase access in the Project Area, but this effect would be minimal and the increased access would end when logging is completed and the roads are returned to storage condition or decommissioned. Proposed road management objectives would keep motorized access below its current levels.

### **3.3.6.3 Competition**

Kake is the only rural community that relies heavily on Kuiu Island for a substantial portion of its subsistence food needs. As reported earlier, deer hunting has moved mostly to Admiralty Island, which increases the competition for deer at that location with other rural communities and sport hunters. It also changes the historic use of Kuiu Island.

Most furbearer trapping comes during the winter months and is done from a boat. Kuiu Island is remote and few trappers are able to reach it reliably during the trapping season. There is no longer a year-round logging camp and much of the recreational trapping that occurred when this camp was occupied has stopped.

Competition for upland birds and waterfowl should not be affected by any of the proposed activities. The number of hunters in the area may temporarily increase during active logging operations, but long-term competition would be reduced by road closures and the difficulty in accessing the area during the spring and fall months when these animals are normally harvested for food.

None of the action alternatives should have any effect on competition between rural and non-rural residents since none of the alternatives would change the existing access patterns to other communities. Potential conflicts among user groups for subsistence resources would not vary by alternative.

### **3.3.7 Cumulative Effects**

The Catalog of Events for Kuiu Island was referenced in determining cumulative effects. Projects considered include the following:

- Forest Service Timber Sale EISs: Threemile Timber Sale EIS (outside Project Area), and Crane and Rowan Mountain Timber Sales EIS (within the Project Area),

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- Other Forest Service programs such as the provision of personal use wood,
- Timber offered by other landowners (private, State of Alaska, Mental Health Trust), and
- General population dynamics.

According to model predictions, WAA 5012 can meet the State of Alaska's objectives for a deer population to meet current hunter demand for all alternatives and meet the Kake subsistence needs as testified to by residents of Kake.

In recent years, intensive timber management has taken place on Native Corporation and National Forest System lands adjacent to Kake further reducing the winter habitat capability of the nearby areas to support deer, and increasing the need of Kake subsistence users to travel further distances to harvest deer. With the deer populations still low on Kuiu Island, hunters have been traveling to Admiralty Island, which is an increased risk to the hunters, as the distance is further and Fredrick Sound can be dangerous to cross during the winter months.

Finally, looking into the future, the current habitat capability is estimated to decline by about two percent over the next 30 years.

The analysis for this project indicates that for any action alternative, the proposed timber harvest, in combination with past and reasonably foreseeable future timber harvest, will not likely result in a significant possibility of a significant restriction of subsistence resources.

The Forest Plan addressed the long-term consequences on subsistence and concluded that full implementation of the Forest Plan may result in a significant possibility of a significant restriction to subsistence use of deer due to the potential effects of projects on the abundance and distribution of deer, and on competition for deer (Forest Plan ROD, p. 24). At this time this restriction is not anticipated in the reasonably foreseeable future for the following reasons:

- The Forest Plan analysis was based on full implementation of the Forest Plan by 2095. Forest Plan FEIS (p. 3-373) predicts that WAA 5012 will retain 56 percent of the 1954 deer habitat capability (compared to 80 percent in 1995). These projections were made using the assumption that the Forest Plan would be implemented in its entirety (most harvest completed using even-aged management, clearcutting).
- To date, planned timber harvest on Kuiu Island has had less impact on wildlife habitat values than predicted because modified prescriptions have reduced the use of clearcutting as the major method for cutting trees.



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- The Forest Plan assumed an 18 percent increase in community population growth for each of the first two decades and a 15 percent increase for each of the next three decades (Forest Plan FEIS Part 2, p. 3-528).
- Populations in Southeast Alaska have actually declined an average of three percent between 1995 and 2003.

Given the above rationale, it is likely that this restriction, if it occurs, would occur somewhat later than predicted.

At some time in the future, if projected human population increases occur, and as habitat degradation (reduced deer habitat capability) increases, the demand for deer for all hunters (subsistence plus sport) may well exceed supply. At that time, a restriction on sport hunting may be required to ensure the availability of adequate subsistence resources needed by rural communities (Forest Plan FEIS Part 2, p. 3-625). Until that time, cumulative effects on subsistence use patterns of Kuiu Island by rural residents are expected to remain unaltered.

### **3.3.8 Conclusions and Findings**

Cumulative effects from past actions, the proposed action, and reasonably foreseeable future activities within WAA 5012 are not expected to result in a significant restriction of subsistence uses of Sitka black-tailed deer, black bear, moose, furbearers, marine mammals, upland birds, waterfowl, salmon, other finfish, shellfish, or other foods.

Based on the habitat modeling and subsistence deer harvest reported by the ADF&G, the Federal Subsistence Program, and the Forest Plan, the current level of subsistence deer harvest (1992-2005) can be achieved for any of the alternatives within the WAA.

Subsistence hearings were held in Petersburg on March 16, 2006 and in Kake on March 21, 2006; written comments were accepted. Three people testified in Petersburg and one person testified in Kake.

## 3.4 Issue 3 – Timber Sale Economics

### 3.4.1 Introduction

Timber purchasers and affected communities are concerned about the quantity, quality, frequency, and profitability of timber offered for sale from the Tongass National Forest. Additionally, there is a concern how an unstable supply affects communities through primary and secondary employment and support.

Some comments that were received during the scoping period offered suggestions for improving overall timber harvest economics on the Tongass National Forest. Suggestions included: 1) meet the Forest Plan Allowable Sale Quantity to ensure adequate supply; 2) provide economic sales that allow adequate profit for both small and medium-sized businesses; 3) limit the use of helicopter yarding; 4) minimize the use of partial harvest; and 5) minimize road construction.

#### 3.4.1.1 Methods

Data used in preparation of this analysis was gathered through field evaluations, GIS analysis and mapping and Region 10 approved models.

#### ***NEPA Economic Analysis Tool Residual Value (NEAT\_R)***

NEAT\_R (Version 2.10) was used to analyze the alternatives based on the Residual Value Appraisal (RV) (FSH 2409.22) information combined with project-specific information to produce an estimate of net volume, costs, jobs, and relative bid value for the alternatives presented. At the time of this FEIS, the NEAT\_R model was updated to reflect the new residual value appraisal system and the Limited Interstate Commerce Shipping policy. NEAT\_R is a model designed to show the financial differences between alternatives to help the decision maker see the economic implications of the decision.

NEAT\_R is not intended to display a final appraised stumpage of an individual timber sale. Before a timber sale is advertised, it is appraised to estimate the fair market value and when a timber sale is offered, it is offered competitively with the contract normally awarded to the highest bidder. These requirements help ensure that the government receives a fair market value for any timber it sells. For further details on the NEAT\_R model, see the Timber Economics Resource Report available in the planning record.

#### ***Road Construction Costs/Logging Costs***

The economic analysis process calculates net stumpage values from costs collected from current timber sale purchasers. The estimated stumpage value for any given sale is based on these collected costs, with adjustments for sale specific data. Logging costs (stump-to-truck

costs) vary by quality and quantity of timber per acre. Logging costs include timber falling, bucking, and yarding. The net stumpage values vary by volume and species composition, timber quality, silviculture prescriptions, logging systems, and type and amount of road construction.

### 3.4.1.2 Analysis Area

The Kuiu Timber Sale analysis area includes approximately 46,102 acres of land. This land is comprised of the project unit pool, along with all surrounding forestland that, if harvested, would logically be brought to the project's road system and hauled to either Rowan Bay LTF or Saginaw Bay LTF. For a detailed description of the Project Area refer to Chapter 1, Description of the Project Area (1.6).

### 3.4.2 Changes between DEIS and FEIS

Changes identified between the Draft and Final EIS have made it necessary to update the logging system and timber sale economics analysis for the Kuiu Timber Sale. These changes included the exclusion of MMI-4 soils from certain alternatives and within units, and the changes in economics (see Changes Made Between the Draft EIS and the Final EIS in Chapter 2).

The changes in the economic condition have made the most significant impact to the economic feasibility of the alternatives analyzed for the Kuiu Timber Sale. In the DEIS all action alternatives were economically positive. While all alternatives are now economically negative, the relative ranking of the alternatives has not changed. Alternative 5 remains the most economical.

As shown between the DEIS and the FEIS, timber markets and values tend to fluctuate dramatically. Because of these market fluctuations, it is good management to have timber volume cleared through the NEPA process to be available for sale when favorable markets exist.

### 3.4.3 Environmental Consequences

This section compares the costs and benefits that can be quantified in terms of actual dollars spent or received with the sale of any alternative. These costs consider the following factors: volume offered, logging costs, stumpage values (predicted bid per unit of measure), and direct employment.

#### 3.4.3.1 ASQ and Non-Interchangeable Components (NIC)

The allowable sale quantity (ASQ) is the amount of timber that can be sold from lands suitable for timber production by decade for a National Forest. It is divided into two non-interchangeable components (NIC I and NIC II) based on economic factors. Timber harvest is more economic on NIC I lands than it is on NIC II lands. For the Project Area all of the proposed timber harvest units are on NIC I lands (see the Transportation section in this chapter). Refer to Appendix A for more information about the ASQ.



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## 3.4.3.2 Payments to the State of Alaska

Prior to 2000, in states with national forests, 25 percent of the returns to the US Treasury from revenue producing activities such as timber sales were returned to each state for distribution to counties (or in Alaska, boroughs) having national forest within their boundaries. Those payments were commonly referred to as the 25 percent fund and by law were dedicated to funding schools and roads. Under that approach, as specific revenues from national forest lands increased or decreased so did the payments to states.

In October 2000, the Secure Rural Schools and Community Self-Determination Act was enacted to stabilize those federal payments to states in response to declining federal receipts from national forests. The legislation was originally authorized for implementation from 2001 through 2006. In May 2007, emergency supplemental legislation extended the legislation for one year, for fiscal year 2007.

Under the Secure Rural Schools legislation, payments to the state are not linked to actual annual revenues from national forest lands, rather they are based on a high 3 year historic average. As a result during the period 2001 through 2006, Alaska received payments of approximately \$9 million per year, primarily for schools and roads, with provisions for special project funding to boroughs who decide to convene citizen committees, called RACs, or Resource Advisory Committees.

For fiscal year 2007, payments to states continue to follow the direction in the Secure Rural Schools legislation. Under that approach, funding to states is based on a historic high 3 year average. If that legislation is not extended or reauthorized, payments will revert back to the 25 percent approach, which means funding amounts would increase or decrease as revenue generating activities, like timber sales, increase or decrease.

## 3.4.3.3 Volume Estimates

Volume calculations for this economic analysis are based on information from stand exams and historic timber sale cruise statistics. Volumes for the alternatives are displayed in thousand board feet (mbf) in Table 3-52 in the Timber and Vegetation section of this chapter. The sum of unit volumes by species is also factored into the economic analysis. Table 3-52 also displays the species composition in proposed harvest units for each action alternative.

Based on averages for the Petersburg Ranger District, volume classification for the suitable and available productive forest land is estimated for the Project Area and is displayed in Table 3-18.

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Detailed explanations of the rationale for considering timber harvest in the Project Area and market demand for wood products is located in Appendix A. More information can also be found in the Forest Plan FEIS, Part 1 (pp. 3-248 to 3-307).

**Table 3-18. Suitable and available productive forest land strata and volume estimates for the Kuiu Project Area**

Volstrata	Percentage	Acres	Sawlog mbf/acre	Sawlog mmbf	Sawlog & utility mbf/acre	Sawlog & Utility mmbf
Low	2%	454	16.9	27	18.9	31
Medium	18%	3,790	24.1	123	27.5	140
High	78%	16,082	29.3	482	33.4	549
None <sup>a</sup>	2%	382				
<b>Total</b>	<b>100%</b>	<b>20,708</b>		<b>632</b>		<b>720</b>

<sup>a</sup> These acres are "holes" in the GIS layer and represent forested areas of unknown volume quality or small inclusions of non-forest land.

## 3.4.3.4 Road Construction Costs/Logging Costs

This analysis compares estimated costs and net stumpage values for transporting the logs to both Rowan Bay LTF (Table 3-19) and Saginaw Bay LTF (Table 3-20) and estimates a relative bid value for each action alternative (Table 3-21).

The differences in logging costs and the estimated bid among the action alternatives can be attributed to multiple factors, including:

- Differences in species composition, volume per acre harvested, and timber quality,
- Differences in harvest prescriptions,
- Differences in yarding systems,
- Amount of temporary road construction,
- Differences in haul distances, and
- Unique costs associated with the alternative.

The towing/barging cost is appraised to the nearest production site for all sawlogs and utility wood. All alternatives were appraised assuming towing/barging to the same production site in Sawmill Cove, Wrangell, Alaska, which is the closest facility that could handle the total sale volume. Road costs include the construction of new NFS and

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temporary roads and the reconditioning and maintenance of NFS roads.

**Table 3-19. NEAT\_R logging costs by alternative for haul to Rowan Bay LTF**

Cost Item		Alternatives				
		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Stump-to-truck	\$ per mbf	N/A	\$168.36	\$172.90	\$181.96	\$171.30
Haul, barge, tow	\$ per mbf	N/A	\$126.70	\$132.48	\$126.96	\$134.18
Road Maintenance	\$ per mbf	N/A	\$29.70	\$20.38	\$23.54	\$7.41
Unusual Adjustments <sup>a</sup>	\$ per mbf	N/A	\$12.31	\$11.77	\$11.34	\$11.37
Road Costs	\$ per mbf	N/A	\$59.94	\$79.52	\$49.28	\$54.09
Total	\$ per mbf	N/A	\$397.01	\$417.05	\$393.08	\$378.35

<sup>a</sup> Unusual adjustments are estimates for surface replacement deposits, camp days, and camp setup costs.

**Table 3-20. NEAT\_R logging costs by alternative for haul to Saginaw Bay LTF**

Cost Item		Alternatives				
		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Stump-to-truck	\$ per mbf	N/A	\$168.36	\$172.90	\$181.96	\$171.30
Haul, barge, tow	\$ per mbf	N/A	\$111.53	\$116.52	\$112.98	\$119.34
Road Maintenance	\$ per mbf	N/A	\$23.23	\$15.29	\$19.14	\$5.19
Unusual Adjustments <sup>a</sup>	\$ per mbf	N/A	\$12.31	\$11.77	\$11.34	\$11.37
Road Costs	\$ per mbf	N/A	\$59.94	\$79.52	\$49.28	\$54.09
Total	\$ per mbf	N/A	\$375.37	\$396.00	\$374.70	\$361.29

<sup>a</sup> Unusual adjustments are estimates for surface replacement deposits, camp days, and camp setup costs and include costs associated with the reconstruction of Saginaw Bay LTF.



**Table 3-21. Volume by alternative and expected bid to Rowan Bay and Saginaw Bay LTFs**

Alternative	Volume	Indicated Bid/MBF	Expected Bid/MBF
	MBF	NEAT_R Rowan	NEAT_R Saginaw
Alt 1	0	\$0.00	\$0.00
Alt 2	9,617	\$(157.99)	\$(136.27)
Alt 3	15,859	\$(179.99)	\$(158.94)
Alt 4	33,300	\$(155.11)	\$(136.71)
Alt 5	31,354	\$(141.28)	\$(126.92)

### 3.4.3.5 Harvest Prescriptions

In general, the more volume per acre removed from a stand, the lower the per-unit logging cost. Table 3-22 displays the acres of harvest by prescription for each alternative.

**Table 3-22. Acres of harvest prescriptions by alternative**

Harvest System	Alternative				
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Even-aged management (clearcut)	0	197	409	1,025	1,208
Two-aged management (clearcut with reserves)	0	175	286	128	0
Uneven-aged management (single tree selection)	0	87	72	193	0
Uneven-aged management (group selection)	0	19	19	41	0
Total	0	478	786	1,387	1,208

### 3.4.3.6 Logging Systems

Three different yarding systems are proposed in the Project Area. Total acres by yarding system are shown in Table 3-23. Proposed

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yarding methods for individual units are noted on the unit cards (Appendix B).

Table 3-23. Acres of proposed timber harvest by yarding system

Harvest System	Alternative				
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Cable	0	395	751	1,092	1,059
Shovel	0	83	35	147	149
Helicopter	0	0	0	148	0
Total	0	478	786	1,387	1,208

## Cable yarding

Cable yarding systems are best suited for steep slopes and wet soils. Cable systems minimize soil disturbance by partially or fully suspending the logs over the ground. Cable yarding is not suitable for all silvicultural prescriptions. Cable systems can be more limited when compared to the other systems because a clear path is needed to pull the logs to the landing.

Cable yarding is most efficient with clearcut systems. Two-aged and uneven-aged silvicultural systems are possible, but the tower for the cable system needs to be moved more often, which increases costs. Downhill yarding with cable yarding systems require open areas to reduce the risk of injury to logging crews, since there is less control of the logs as they approach the landings. Uphill yarding gives more flexibility, especially if a lateral carriage is used to bring the logs from the sides to the middle of the corridor. Extra care is needed to protect the remaining trees in a partial harvest.

Among the action alternatives, Alternative 4 proposes the most cable logging, followed in descending order by Alternative 5, Alternative 3, and Alternative 2.

## Shovel yarding

Track mounted log loaders (shovels) have been used throughout the Tongass National Forest where the slope is generally less than 20 percent. Placing slash underneath the tracks as the loader moves through the unit provides a mat to displace the weight of the equipment over a larger surface area, which minimizes the possibility of soil compaction.

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Shovel yarding is limited to roadsides. The average yarding distance on each side of the road has been 700 feet. Recently, however, distances of up to 900 feet have been shovel yarded. In many units, shovel yarding is used for the timber near the road and the rest of the unit is cable logged. Shovel logging does provide flexibility in the selection of trees to be harvested. Shovel yarding is the least costly yarding method used in this analysis.

Among the action alternatives, Alternative 5 proposes the most shovel logging, followed in descending order by Alternative 4, Alternative 2, and Alternative 3.

### ***Helicopter yarding***

Helicopter yarding is the most expensive yarding method due to the high costs associated with operating and overhead. Many factors influence the economic viability of helicopter yarding. They include, but are not limited to: yarding distance, turn time, fuel costs, and the value of the timber harvested.

Helicopter yarding can have an extreme effect on the economic viability of an alternative. However, higher quality timber in combination with short yarding distances could result in an economic alternative with helicopter yarding requirements.

Helicopter yarding is best suited for units where NFS or temporary roads cannot be constructed to access suitable timber areas and is the least ground disturbing yarding method. Helicopter yarding also allows for partial harvest silviculture prescriptions.

Alternative 4 is the only alternative that proposes helicopter yarding.

### **3.4.3.7 Small Sales**

Maintaining a consistent small sale offering is a component of the Petersburg Ranger District timber sale program. Due to the distance of the Project Area from processors, it is unlikely individual units would be offered for sale.

### ***Small Business Administration Program***

The Forest Service and the Small Business Administration review market demand and supply and agree on an annual amount of volume to be offered to small businesses from the Tongass National Forest. Once the Record of Decision is signed, any changes in timber sales offered would be reflected in an update to the Tongass National Forest 5-year sale schedule and the Periodic Timber Sale Announcement for timber sale schedules which is available upon request. All of the mills in Southeast Alaska currently qualify as small businesses.



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## 3.4.3.8 Employment

Any of the proposed action alternatives could generate or maintain employment and income in Southeast Alaska as a result of timber harvest, if timber is offered and sold (Table 3-24). All action alternatives would provide diverse opportunities, including direct and indirect employment. Direct jobs are logging, construction, marine transport, and processing. Indirect employment refers to businesses supporting the wood products industry. Historically, Alaska yellow-cedar has been exported and it is unlikely this pattern will change in the near future. In March 2007 the Regional Forester approved a new limited interstate commerce shipping policy. Shipments will be limited on each sale to a maximum of 50 percent of total sawlog contract volume harvested of all species; including western redcedar and Alaska yellow-cedar, unless the Regional Forester expressly grants an exception in advance on case-specific unusual circumstances.

In Southeast Alaska, sawmilling results in 4.31 annualized jobs per MMBF and logging results in 2.07 annualized jobs per MMBF. This data is based on 2000 to 2004 data and on total volume sold on the Tongass National Forest (Alexander 2006). The estimate of the sawmilling jobs was taken into account by the NEAT\_R analysis model (Version 2.10).

Predictably, the higher the volume of timber available and sold, the more jobs and income generated. The Forest Plan FEIS, which bases its employment figures on the Tongass-wide timber base, has indicated the estimated number of available jobs expected for the planning period.

**Table 3-24. Logging and Milling Related Employment and Income**

		Alt 2	Alt 3	Alt 4	Alt 5
A.	Direct employment (Job Years)	61	100	111	198
B.	Total Direct income (Millions \$)	3.39	5.60	9.95	8.54

A = Job year (one year job = full time 12 month job equivalent) per harvest. Averages on file with Regional Economist. Range accounts for the interstate commerce policy.

B = Gross income per harvest estimate. Average on file with Regional Economist.

## 3.4.3.9 Administrative Project Costs

The costs and management expenses include environmental analysis, sale preparation, sale administration, and engineering support. Forest Service cost per thousand board feet (mbf) is based on the Region 10 average budget allocation of \$48.16/mbf for analysis, \$25.76/mbf for

sale preparation, \$10.08/mbf for sale administration, and \$28.00/mbf for engineering support.

### ***Environmental Analysis***

Environmental analysis costs include field inventory and the analysis of data, public involvement, and the preparation of a document that satisfies the requirements of the National Environmental Policy Act. Although it is based on timber volume, the cost fluctuates more with the amount of area to be examined and the accessibility of that area. The Project Area is accessible by helicopter, floatplane or boat, and is located on Kuiu Island on the Petersburg Ranger District. The environmental analysis cost is constant based on the proposed action and applies to all alternatives, including the No-Action alternative.

### ***Sale Administration***

Sale administration costs are higher when helicopter logging is involved because of the increased cost of accessing the timber harvest for administration. Scattered and smaller harvest areas are more costly to visit. Alternative 4 would have higher costs than the other action alternatives because of the higher sale administration costs for helicopter yarding. Alternative 5 would be the next most costly.

### ***Sale Preparation***

Unit layout and cruising costs increase significantly when partial harvest is prescribed compared to clearcutting. The Alternatives-to-clearcutting Research Study on Kupreanof Island required about eight times more person-days to prepare a unit that involved marking individual trees throughout the unit compared to a clearcut unit. Designation of two-acre patches took about four times longer than a clearcut. Accessibility to the units is another major cost factor. Helicopter access and steeper terrain increase sale preparation costs compared to areas with existing road access.

Using these cost factors, Alternative 2 would be the least costly to prepare. Alternatives 3 and 5 would be more costly than 2. Alternative 4 would be the most costly because it has the most acres of two-aged and uneven-aged management stands.

#### **3.4.4 Direct and Indirect Effects**

##### **3.4.4.1 Financial Analysis**

Economic efficiency analysis or cost/benefit analysis is best done at a scale much larger than a project area. A regional scale economic analysis is presented in the Forest Plan FEIS Part 2, which balances resource uses and values for the Tongass National Forest. The economic analysis compares the costs and benefits of all resources, whether or not these costs and benefits are realized as an explicit

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market price. This analysis considers a variety of positive and negative resource-related external factors, passive use, non-consumptive use, and opportunity costs at various scales.

An economic efficiency analysis includes benefits and costs that are not easily valued through the market or exchange of money, and can be difficult to quantify or summarize. Often, the same impact may be considered a cost to some and a benefit to others, depending on individual values. The analysis in this document tiers to the analysis done in the Forest Plan for non-commodity resources. Direct effects of the Kuiu project for economic sectors are displayed in the previous tables to the extent that they are known.

Alternative 1, No-Action, would maintain the current level of opportunities other than timber harvest for resource use. Those people interested in maintaining unroaded areas, primitive recreation opportunities, current levels of roaded access, and scenery would have the same condition in the near future as they have now. Those interested in using or expanding roaded recreation and access, or increasing wood product resource uses, would also have the same opportunities in the near future as they do now.

All action alternatives would cause changes to the existing economic conditions. These changes are described as increases or decreases in opportunities, benefits, or costs. In general, alternatives with lower harvest levels tend to have less impact on other resources when compared to those with higher levels. Many of the costs are short-term, lasting only as long as the timber sale is active. Noise, LTF activity, and increased traffic are examples of short-term impacts. Other costs have more long-term effects. Road development, visual changes to harvest units, increased access, and scenery changes are impacts that would remain after timber harvest.

### 3.4.4.2 Effects common to all action alternatives

Alternatives 2, 3, 4, and 5 were designed to satisfy the Purpose and Need and address the significant issues. This project is consistent with the management goals and desired conditions for Timber Production LUDs. Unit designs address specialists concerns, such as wildlife habitat, visual landscape, and sensitive soils. Yarding systems were assigned through field verification and cost considerations. The current export policy for the Tongass National Forest allows for the export of Alaskan yellow cedar and limited interstate shipments.

In all alternatives, no NIC II ground is harvested. All action alternatives would include small roadside landings constructed to widen existing roads for log yarding and decking operations. The timber from all action alternatives was analyzed assuming it would be



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barged or rafted to Wrangell from either Rowan Bay or Saginaw Bay LTF.

All action alternatives contribute to the Tongass National Forest's orderly flow of timber by providing timber for sale that can be adjusted to coincide with the latest market conditions.

### **3.4.4.3 Effects by Alternative**

#### ***Alternative 1***

No timber would be harvested. In order to meet the estimated demand for timber, more timber may need to be harvested elsewhere on the Tongass National Forest. This alternative would provide no opportunities for local wood products employment, and no return to the U.S. Treasury. There would be no small sales offered for local operators. There would be no effect on commercial recreation use, commercial fisheries, or the current level of opportunities, other than timber harvest, for resource use. Alternative 1 does not propose to do any timber harvest or road construction, so there would be no other costs.

#### ***Alternative 2***

This alternative proposes to harvest 9,617 mbf using shovel and cable yarding systems. This alternative would harvest the lowest volume of the four action alternatives.

Estimated logging costs to Rowan Bay LTF would be \$397.10/mbf and \$375.38/mbf to Saginaw Bay LTF. The predicted bid is a negative \$157.99/mbf for Rowan Bay LTF and a negative \$136.27/mbf for Saginaw Bay LTF. About 61 direct jobs would be maintained with this alternative.

#### ***Alternative 3***

This alternative proposes to harvest 15,859 mbf using shovel and cable yarding systems. This alternative represents the least economic alternative of the four action alternatives with an estimated logging cost to Rowan Bay LTF of \$417.05/mbf and \$396.00/mbf to Saginaw Bay LTF.

The predicted bid is a negative \$179.99/mbf for Rowan Bay LTF and a negative \$158.94/mbf for Saginaw Bay LTF. About 100 direct jobs would be maintained with this alternative.

#### ***Alternative 4***

This alternative proposes to harvest 33,300 mbf (the highest volume of the alternatives) using shovel, cable, and helicopter yarding systems. It

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is the only alternative that would require the use of helicopter yarding systems.

Estimated logging costs to Rowan Bay LTF would be \$393.10/mbf and \$374.70/mbf to Saginaw Bay. The predicted bid is a negative \$155.11/mbf for Rowan Bay LTF and a negative \$136.71/mbf for Saginaw Bay LTF. About 211 direct jobs would be maintained with this alternative.

## **Alternative 5**

This alternative proposes to harvest 31,354 mbf using shovel and cable yarding systems. It is the only alternative that proposes clearcut prescription for all units and is therefore the most economical.

Estimated logging costs to Rowan Bay LTF would be \$378.35/mbf and \$361.28/mbf to Saginaw Bay. The predicted bid is negative \$141.28/mbf for Rowan Bay LTF and negative \$126.92/mbf for Saginaw Bay LTF. About 198 direct jobs would be maintained with this alternative.

### **3.4.5 Cumulative Effects**

#### **3.4.5.1 Alternative 1**

No timber would be harvested from the Project Area. Timber needed to meet estimated demand would have to be harvested from other areas on the Tongass National Forest.

#### **3.4.5.2 Alternatives 2, 3, 4, and 5**

These alternatives would help contribute to a stable timber industry in Southeast Alaska, which depends on a steady flow of economic timber sales in order for operators to make investments in machinery and to employ qualified workers. All action alternatives would contribute to supplying timber sales to meet market demand. Volume from the Kuiu Timber Sale Area, in combination with other timber sales offered on the Tongass National Forest, would contribute to a stable long-term timber supply. A 5-year Timber Sale Plan on Kuiu Island has been approved by the Forest Supervisor.

Other timber sale projects on Kuiu Island include volume analyzed in the Crane and Rowan Mountain Timber Sales EIS (July 1998) and the Threemile EIS.

## 3.5 Issue 4 – Cumulative Effects of Logging and Road Construction on Watersheds

### 3.5.1 Introduction

This section describes the watersheds affected by the proposed Kuiu Timber Sale, and provides an analysis of the effects of the proposed activities on watershed resources. A detailed description of the watersheds affected by this project can be found in the project planning record.

Kuiu Island is subject to the State of Alaska Water Quality Standards (18 AAC 70), which are set according to protected water use classes and subclasses. Protected water use classes for freshwater include: 1) water supply, 2) water recreation, and 3) growth and propagation of fish, shellfish, other aquatic life, and wildlife. The fresh waters of Kuiu Island are used primarily for water recreation and growth and propagation of fish, shellfish, other aquatic life, and wildlife. There is one special use permit at Saginaw Bay for private use and some use of water at the Forest Service camp at Rowan Bay.

The Forest Plan guides the management of soil and water resources on the Tongass National Forest. Appendix J of the Forest Plan describes the need for watershed analysis, defines the core topics of the watershed analysis, and guides the scale and intensity of the analysis. The scale, intensity, and complexity of the watershed analysis are to be commensurate with the level of cumulative risk. The following characteristics are used to determine whether a watershed may receive a more intensive, complex, and field-based watershed analysis:

- High value fish habitat,
- High sediment yield risks or erosion potential,
- Extensive very high and high hazard soils,
- Presence of threatened, endangered, or sensitive species,
- More than 20 percent of the watershed acres with trees in second-growth younger than 30 years, or
- A high density of roads and stream crossings.

The Kuiu Timber Sale proposes timber harvest and road building in many previously harvested watersheds on Kuiu Island. All of the major watersheds within the Project Area have streams with high value fish habitat. Three of the watersheds within the Project Area have near 20 percent or greater cumulative harvest levels over the last 30 years, and there is a high potential for changes in stream channel conditions



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if sediment loads increase. Public comments generated from scoping for the Kuiu Timber Sale indicate that some people are concerned about the possibility of negative cumulative watershed effects resulting from the proposed project. To address the issue of cumulative watershed effects, and to follow the intent of the Forest Plan, a detailed watershed analysis was completed for the watersheds affected by proposed activities (analysis is located in the project planning record). The watershed analysis includes the elements of a six step process outlined in Ecosystem Analysis at the Watershed Scale (Regional Interagency Executive Committee 1995). The six step process includes: 1) characterization of the watershed, 2) identification of issues and key questions, 3) description of current conditions, 4) description of reference conditions, 5) synthesis and interpretation of information, and 6) recommendations.

Different components of the watershed analysis are framed within different time scales, depending on what is being analyzed, and what supporting documentation is being used (Table 3-25).

**Table 3-25 Components of the Watershed Analysis**

Analysis component	Timeframe for analysis	Interpretation	Rationale	Source
Percent of watershed in second growth	Within last 30 years	Greater than 20% indicates need for detailed watershed analysis	Conservative timeframe ensures appropriate detail	Forest Plan, Appendix J
Acres of second growth in watershed	Within last 20 years	Treated as possible source area for landslide in sediment risk analysis	Research indicates logging increases landslide susceptibility for about 20 years	Brardinoni <i>et al.</i> 2002
Acres of road within watershed	No time limit, all roads included	Treated as possible source area for landslide in sediment risk analysis	Increased landslide susceptibility associated with roads may persist for decades, depending on many factors	Brardinoni <i>et al.</i> 2002

In this document, a basic watershed analysis is presented for all watersheds that could be affected by proposed activities. The basic watershed analysis includes a Sediment Risk Assessment, the details of which are described below. For watersheds that have had greater than 20 percent cumulative harvest within the last 30 years, a more detailed watershed analysis is presented. For these watersheds, the

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analysis incorporates the results of detailed, field-based assessments of stream channel condition. The criteria for these assessments are described below.

### **3.5.2 Area of Analysis**

The spatial analysis area for the assessment of all direct, indirect, and cumulative effects to watershed resources in the Project Area includes the entire Dean Creek, Saginaw Creek, Security Creek, Rowan Creek and Kadake Creek watersheds, and unnamed watersheds #109-45-10090 and #109-44-10370. The watershed boundaries correspond to the 6th level Hydrologic Unit Code (HUC), and all are true watersheds, meaning that each watershed is well defined by topographic boundaries and all surface water within the watershed drains to a single stream or river.

The seven watershed listed above were selected as the area of analysis because the watershed boundaries are large enough to allow a comprehensive accounting of all activities that affect current and future watershed conditions, yet small enough to allow the analysis to be sensitive to the potential effects of the proposed activities (Regional Interagency Executive Committee 1995).

Temporally, cumulative watershed effects may be influenced by some of the activities summarized in the Kuiu Catalog of Events. In this analysis, emphasis was given to timber harvest activities in the past 30 years and road building activities regardless of age. Both activities are known to potentially effect changes in peak flow, timing of runoff, and sediment delivery to streams.

### **3.5.3 Methods**

#### **3.5.3.1 Sediment Risk Assessment**

The Sediment Risk Assessment (SRA) was developed for use in Southeast Alaska (Geier 1998) and the information presented in this document originally appeared in the Kuiu Island Landscape Assessment (USDA 2005). This tool integrates stream, soil and watershed characteristics to facilitate a comparison of the relative potential for sediment-related changes in stream channels to occur among a group of watersheds. Because the assessment tool is designed to compare the relative sediment risk among groups of watersheds, it is most appropriately used at large scales where there are many watersheds with varying morphology.

The basic assumptions of the Sediment Risk Assessment are:

- The potential for sediment delivery to streams (transport potential) in a watershed increases with higher density of steep slopes, unstable soils, harvest areas, and roads.
- The higher the density of low-gradient, sediment-storing stream channels in a watershed (storage potential), the greater the chance

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that sediment inputs to streams will cause changes such as channel widening or pool filling.

This analysis results in the sediment risk index (SRI), which ranges from very low to very high (Table 3-26). The SRI is highest where there are combinations of high transport potential in headwaters areas of watersheds and high storage potential in the lower portions of watersheds.

**Table 3-26. Interpretation of the Sediment Risk Index (SRI)**

SRI Percentile	SRI Ranking
Greater than 90 <sup>th</sup>	Very High
Between 75 <sup>th</sup> and 90 <sup>th</sup>	High
Between 50 <sup>th</sup> and 75 <sup>th</sup>	Moderate
Between 25 <sup>th</sup> and 50 <sup>th</sup>	Low
Less than 25 <sup>th</sup>	Very low

The SRA was run twice for the Kuiu Island Landscape Assessment, and a third time for this proposed timber sale. The first run did not account for timber harvest and road building. This provides an assessment of the inherent risk of sediment effects to streams based solely on the natural characteristics of the watershed and the stream network. The second run of the SRA accounted for all roads and landings, regardless of their age, and all timber harvest occurring within the past 20 years. Except for roads and landings, timber harvest that occurred more than 20 years ago was not accounted for because harvested slopes are expected to recover rooting strength in the soil and stabilize after a 20-year period (Brardinoni et al. 2002). The second run of the SRA was used to describe the current condition of the watersheds analyzed. The third run accounts for proposed harvest and road building associated with each alternative. Relative levels of sediment delivery risk from the second and third runs of the SRA change as cumulative harvest levels increase or decrease. Since most timber harvest in the Kuiu watersheds occurred in the 1970s-1980s, cumulative harvest levels are declining and SRI values are trending toward inherent levels. Results of the third run are presented below under each alternative.

The SRA highlights the variations in watersheds on Kuiu Island with regard to watershed morphology, stream channel morphology, topography, and soil characteristics. These variations demonstrate why landslides and sediment-related changes to stream channels, such as pool filling or channel widening, are more likely in some watersheds



than others on Kuiu Island. This is consistent with findings from research on landslide frequency (Swanston and Marion 1991), and stream channel response to sediment inputs.

## 3.5.3.2 Channel Condition Comparisons

The Forest Plan calls for using baseline fish habitat objectives, as described in the Anadromous Fish Habitat Assessment (USDA FS 1995), for evaluating the condition of aquatic habitat in stream channels. The Tongass maintains an inventory of stream channel measurements obtained in streams draining unharvested basins. This inventory allows percentile ranges to be defined for a set of physical habitat characteristics that are considered important to fish populations. This provides criteria for evaluating the physical habitat characteristics of streams draining harvested basins (Table 3-27). Flood Plain (FP) channels were surveyed in most watersheds analyzed below, and results were compared to the established Tongass baseline fish habitat objective values. The criteria used for assessing the condition of physical habitat characteristics in this analysis include:

- Pools per kilometer,
- Percent of stream channel area in pools,
- Pieces of large wood per kilometer of stream channel, and
- Stream width-to-depth ratio.

**Table 3-27. Interpretation of Percentile Ranking for Flood Plain (FP) Stream Channel Characteristics**

Parameter	Percentile ranking and interpretation			
	25th	50th	75th	
Pools per reach, percent pool area, LWD per 1000m <sup>2</sup>	Poor	Fair	Good	Excellent
Width-to-depth ratio	Excellent	Good	Fair	Poor

## 3.5.4 Existing Condition

This analysis considers seven major watersheds on Kuiu Island (Figure 3-5 and Table 3-28). Watersheds that do not have names on USGS quad maps are numbered according to the system used by ADF&G in the Catalog of Waters Important for Anadromous Fishes (Johnson et al. 2004). The watershed boundaries correspond to the 6th level Hydrologic Unit Code (HUC).

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**Table 3-28. Watersheds within the Project Area, Cumulative Harvest since 1977 and Existing Roads (National Forest System and Temporary Roads)**

Watershed	ADF&G Number	WS Acres	Harvest (ac) since 1977	Existing road (mi)	Existing road <sup>a</sup> (ac)	Cumulative harvest since 1977 (%)
Dean Creek	109-50-10070	4,690	1,010	15.4	65.4	22.9
Saginaw Creek	109-44-10390	8,302	591	20.5	86.8	8.2
Unnamed	109-45-10090	2,140	353	11.5	48.7	18.8
Unnamed	109-44-10370	4,992	383	6.3	26.7	8.2
Security Creek	109-45-10100	5,931	939	15.8	67.2	17.0
Rowan Creek	109-52-10060	13,234	946	23.5	99.5	7.9
Kadake Creek	109-42-10300	32,270	5,167	80.3	340.6	17.1

<sup>a</sup> Assumes that existing roads have an average clearing width of 35 feet. Actual clearing widths vary from zero on closed roads overgrown with vegetation to 75 feet on open NFS roads.

#### 3.5.4.1 Sediment Risk Analysis

The current Sediment Risk Index (SRI) is either high or very high in five major watersheds within the Project Area (Table 3-29). Increases in the SRI above inherent levels reflect that timber harvest has temporarily increased the risk of landslides on harvested slopes, thereby potentially increasing sediment delivery to streams. This statement is consistent with research on forestry and landslide frequency in Southeast Alaska (Swanston and Marion 1991). For sediment-related changes to stream channels to occur, there must be an increase in sediment delivery to streams. Therefore, minimizing the risk of sediment inputs to streams from landslides and roads provides a strategy to avoid undesirable channel changes.

**Table 3-29. Changes to the SRI in Watersheds in the Project Area**

Watershed	Inherent sediment risk index (SRI)	Current SRI
Dean Creek	Low	Moderate
Saginaw Creek	Moderate	High
WS #109-45-10090	Very low	Moderate
WS #109-44-10370	Very high	Very high
Security Creek	Moderate	High
Rowan Creek	Very high	Very high
Kadake Creek	High	Very high

## 3.5.4.2 Dean Creek Watershed

The Dean Creek watershed lies entirely within the Timber Production LUD, and has been managed intensively for timber harvest since 1972. A fishpass was constructed in Dean Creek, representing a major investment in fisheries production. Thirty-three percent (1,538 acres) of this watershed has been harvested (including road clearings) with 23 percent of the watershed harvested in the last 30 years. Timber harvest that has been approved but not implemented would bring the cumulative harvest level to 24 percent. Harvest of riparian areas totals 105 acres or 2.2 percent of the watershed area. There are a total of 15.4 miles of NFS and temporary roads in the Dean Creek watershed (Table 3-28). Road building in this watershed dates back to the 1970s.

### ***Sediment Risk Assessment and Stream Channel Characteristics***

The sediment risk assessment (SRA) for Kuiu Island identified the Dean Creek watershed as having a low inherent risk for sediment-related changes in stream channel characteristics compared to other Kuiu watersheds. After accounting for harvest and road building, the risk rating for sediment-related changes in stream channel characteristics is moderate.

Dean Creek is in excellent condition for the number of pools and in fair condition for the percentage of channel area in pools; in good condition for wood loading; and in fair condition concerning the width-to-depth ratio (Table 3-30). The excellent rating for number of pools, and fair rating for percent of channel area in pools indicates that there are many pools, but that they are smaller than average for a stream of this size. It is unlikely that this is due to a lack of wood loading in the channel, because wood loading was rated as good. Below average pool area and the fair width-to-depth ratio may be related to high sediment loading. This stream was not surveyed prior to timber harvest, so no data is available to describe pre-harvest stream channel conditions.

**Table 3-30. Stream Channel Condition: Dean Creek**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	57.0	Greater than 75 <sup>th</sup>	Excellent
% channel area in pools	37.6	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Fair
Pieces of wood per 1000m <sup>2</sup>	27.1	Between 50 <sup>th</sup> and 75 <sup>th</sup>	Good
Width-to-depth ratio	27.3	Between 50 <sup>th</sup> and 75 <sup>th</sup>	Fair



## 3.5.4.3 Saginaw Creek Watershed

The Saginaw Creek watershed lies almost entirely within a Timber Production LUD and has a harvest history dating to 1968. Twenty-nine percent of this watershed has been harvested; eight percent of the watershed has been harvested within the last thirty years. Early harvest was concentrated in valley bottoms and toe slopes. Harvest in riparian areas totals 450 acres. More recent harvest has occurred on mid-slopes and ridge tops (Figure 3-6). There are 20.5 miles of NFS and temporary roads in the Saginaw Creek watershed. Road building dates back to the 1960s.

### ***Sediment Risk Assessment and Stream Channel Characteristics***

The SRA for Kuiu Island identified the Saginaw Creek watershed as having a moderate inherent risk for sediment-related changes in stream channel characteristics compared to other Kuiu watersheds. The SRI increases to high after accounting for timber harvest and road building. This indicates that low gradient stream reaches in Saginaw Creek may be susceptible to channel changes such as widening, braiding, or pool filling if sediment supply increases.

The East Fork of Saginaw Creek is in fair condition both for the number of pools and the percentage of channel area in pools; in good condition concerning the width-to-depth ratio; and in excellent condition for wood loading (Table 3-31). The West Fork of Saginaw Creek is in good condition for number of pools; in fair condition for pool area; in excellent condition for wood loading; and in good condition considering the width-to-depth ratio (Table 3-32). The streams were not surveyed prior to timber harvest so no data is available to describe pre-harvest stream channel conditions.

**Table 3-31. Stream Channel Condition: East Fork Saginaw Creek**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	37.1	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Fair
% channel area in pools	37.9	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Fair
Pieces of wood per 1000m <sup>2</sup>	56.3	Greater than 75 <sup>th</sup>	Excellent
Width-to-depth ratio	20.0	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Good

**Table 3-32. Stream Channel Condition: West Fork Saginaw Creek**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	48.9	Between 50 <sup>th</sup> and 75 <sup>th</sup>	Good
% channel area in pools	31.8	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Fair
Pieces of wood per 1000m <sup>2</sup>	54.7	Greater than 75 <sup>th</sup>	Excellent
Width-to-depth ratio	20.0	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Good

### 3.5.4.4 Watershed (WS) #109-45-10090

This watershed lies entirely within the Timber Production LUD and has a harvest history dating to 1972 (Figure 3-6). Fifty-nine percent (1,266 acres) of this watershed has been harvested (after accounting for road clearings); 19 percent of the watershed has been harvested within the last 30 years. Harvest in riparian areas totals 85 acres or four percent of the watershed area. There are a total of 11.5 miles of roads in watershed #109-45-10090 (Table 3-28). Road building dates back to the 1960s.

### ***Sediment Risk Assessment and Stream Channel Characteristics***

The sediment risk assessment for Kuiu Island identified watershed #109-45-10090 as having a very low inherent risk for sediment-related changes in stream channel characteristics, compared to other Kuiu watersheds. After accounting for harvest and road building, the risk rating for sediment-related changes in stream channel characteristics is moderate.

The major stream draining watershed #109-45-10090 is in good condition for the number of pools, fair condition for the percentage of channel area in pools, excellent condition for wood loading, and poor condition concerning the width-to-depth ratio (Table 3-33). The good rating for number of pools and fair rating for percent of channel area in pools indicates that there are many pools, but that they are smaller than average for a stream of this size. The high number of pools is likely due to the excellent wood loading in the stream. Below average pool area and the poor width-to-depth ratio may be related to high sediment loading. While these could be natural characteristics of the stream channel, they may also reflect channel adjustments that have resulted from landslides originating in clearcuts, which would likely increase sediment loading in channels upstream. This stream was not surveyed prior to timber harvest, so no data is available to describe pre-harvest stream channel conditions.

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**Table 3-33. Stream Channel Condition: ADF&G stream # 109-45-10090**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	49.1	Between 50 <sup>th</sup> and 75 <sup>th</sup>	Good
% channel area in pools	48.1	Between 25 <sup>th</sup> and 50 <sup>th</sup>	Fair
Pieces of wood per 1000m <sup>2</sup>	89.2	Greater than 75 <sup>th</sup>	Excellent
Width-to-depth ratio	35.6	Greater than 75 <sup>th</sup>	Poor

#### **3.5.4.5 Watershed (WS) #109-44-10370**

The watershed has a harvest dating back to 1983, with a cumulative harvest level of 9 percent, with 8 percent occurring within the past 30 years (Figure 3-6). Riparian harvest totals three acres or less than one percent of the watershed area. There are a total of 6.3 miles of NFS and temporary roads within the watershed (Table 3-28).

#### ***Sediment Risk Assessment and Stream Channel Condition***

The sediment risk assessment for Kuiu Island identifies watershed #109-44-10370 as having a very high inherent risk for sediment-related changes in stream channel characteristics, compared to other Kuiu watersheds. The rating does not change after accounting for harvest and road building. The very high SRI indicates that low gradient stream reaches in this watershed may be susceptible to channel changes such as widening, braiding, or pool filling if sediment supply increases.

The watershed analysis for this watershed did not include a detailed assessment of stream channel conditions in this watershed. More detailed, field-based studies were only conducted for watersheds with greater than 20 percent cumulative harvest levels. Consequently, field data on the condition of the major stream draining this watershed is not available. Field investigations of streams draining proposed harvest units did not identify any impaired stream channels.

#### **3.5.4.6 Security Creek Watershed**

The Security Creek watershed lies almost entirely within the Timber Production LUD, and has a harvest history dating to 1974 (Figure 3-6). Twenty six percent (1,546 acres) of this watershed has been harvested (including road clearings); 17 percent has been harvested within the last 30 years. Harvest in riparian areas totals 77 acres, or 1.3 percent of the watershed area. There are a total of 15.8 miles of NFS and temporary roads in the Security Creek watershed (Table 3-28). Road building in this watershed dates back to the 1960s.



## ***Sediment Risk Assessment and Stream Channel Characteristics***

The SRA for Kuiu Island identified the Security Creek watershed as having a moderate inherent risk for sediment-related changes in stream channel characteristics compared to other Kuiu watersheds. After accounting for harvest and road building, the risk rating for sediment-related changes in stream channel characteristics is high. The high SRI indicates that low gradient stream reaches in Security Creek may be susceptible to channel changes such as widening, braiding, or pool filling if sediment supply increases.

Security Creek is in poor condition for the number of pools; in fair condition for the percentage of channel area in pools; and in excellent condition concerning the width-to-depth ratio (Table 3-34). Data for wood loading in Security Creek is not available. This stream was not surveyed prior to timber harvest so no data is available to describe pre-harvest stream channel conditions.

**Table 3-34. Stream Channel Condition: Security Creek**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	7.1	Less than 25th	Poor
% channel area in pools	39.0	Between 25 <sup>th</sup> and 50th	Fair
Pieces of wood per 1000m <sup>2</sup>	No data	No data	No data
Width-to-depth ratio	27.5	Less than 25 <sup>th</sup>	Excellent

### **3.5.4.7 Rowan Creek Watershed**

The Rowan Creek watershed has a harvest history dating to 1942, with most of the harvest occurring after 1972 (Figure 3-6). Nineteen percent of this watershed has been harvested (including road clearings), and 8 percent of the watershed has been harvested within the last 30 years. About 8 acres of timber harvest that has been approved but not implemented would not increase the cumulative harvest level above 8 percent. Riparian harvest totals 79 acres, or less than one percent of the watershed area. There are a total of 23.5 miles of NFS and temporary roads in the Rowan Creek watershed (Table 3-28). Road building dates back to the 1960s.

## ***Sediment Risk Assessment and Stream Channel Condition***

The SRA for Kuiu Island identifies the Rowan Creek watershed as having a very high inherent risk for sediment-related changes in stream channel characteristics compared to other Kuiu watersheds. The rating does not change after accounting for harvest and road building. The

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very high SRI indicates that low gradient stream reaches in Rowan Creek may be susceptible to channel changes such as widening, braiding, or pool filling if sediment supply increases.

The watershed analysis for the Rowan Creek watershed did not include a detailed assessment of stream channel conditions in the main stem of Rowan Creek. Field investigations of streams draining proposed harvest units did not identify any impaired stream channels in the Rowan Creek watershed. This stream was not surveyed prior to timber harvest, so no data is available to describe pre-harvest stream channel conditions.

### 3.5.4.8 Kadake Creek Watershed

In addition to providing timber, the Kadake Creek watershed provides recreation opportunities, and is important for fisheries production. The watershed has a harvest history dating to 1972 (Figure 3-6). Nineteen percent (6,151 acres) of this watershed has been harvested (including road clearings), and 17 percent of the watershed has been harvested within the last 30 years. Timber harvest that has been approved but not implemented would not increase the cumulative harvest level above 17 percent. Riparian harvest totals 100 acres, or less than one percent of the watershed area. There are a total of 80.3 miles of NFS and temporary roads in the Kadake Creek watershed (Table 3-28). Road building dates back to the 1960s.

### ***Sediment Risk Assessment and Stream Channel Characteristics***

The SRA for Kuiu Island identifies the Kadake Creek watershed as having a high inherent risk for sediment-related changes in stream channel characteristics compared to other Kuiu watersheds. The risk rating increases to very high after accounting for harvest and road building. The very high SRI indicates that low gradient stream reaches in Kadake Creek may be susceptible to channel changes discussed above.

Kadake Creek is in poor condition for the number of pools, excellent condition for the percentage of channel area in pools, and between fair and good condition for wood loading and width-to-depth ratio (Table 3-35). The poor rating for number of pools, and excellent rating for percent of channel area in pools indicates that there are few pools, but that they are larger than average for a stream of this size. Both wood loading and width-to-depth ratio are average. This stream was not surveyed prior to timber harvest; therefore, no data is available to describe pre-harvest stream channel conditions.

**Table 3-35. Stream Channel Condition: Main Stem Kadake Creek**

Channel characteristic	Value	Percentile ranking	Condition
Number of pools / kilometer	11	Less than 25 <sup>th</sup>	Poor
% channel area in pools	69	Greater than 75 <sup>th</sup>	Excellent
Pieces of wood per 1000m <sup>2</sup>	5	= 50 <sup>th</sup> percentile	Fair / good
Width-to-depth ratio	45	= 50 <sup>th</sup> percentile	Fair / good

## 3.5.5 Effects Common to all Action Alternatives

### 3.5.5.1 Direct and Indirect Effects

Each of the proposed action alternatives relies on the existing road system, with newly constructed NFS roads proposed in all alternatives except Alternative 1; action Alternatives 2 through 5 would require the construction and/or reconstruction of temporary roads. All new NFS roads would be placed closed following harvest, and temporary roads would be decommissioned. Closing roads minimizes potential fish passage problems and ensures protection of water quality and fish habitat by keeping road maintenance needs low, and minimizing the potential for sediment delivery to streams from the failure of drainage structures.

Timber harvest and road building would increase the area of potential sediment sources within the watershed. Sediment loading would be expected to be consistent with the Forest Plan, and would not be expected to exceed water quality standards set by the State of Alaska.

The increased risk of landslides is considered an indirect effect to streams, because if landslides do occur they may or may not deliver sediment to streams. Minimizing the risk of landslides in clearcut harvest units and where roads are constructed is addressed by applying BMPs and Forest Plan Standards and Guidelines. Each of the proposed action alternatives would increase landslide potential to some degree. More specific information about landslide potential is presented below under each alternative and in the Soils and Geology section in this chapter.

## 3.5.6 Cumulative Watershed Effects

### 3.5.6.1 Analysis Area

Cumulative watershed effects occur both spatially and temporally. The 6th level HUC watersheds wholly or partially within the proposed Project Area provide the spatial boundaries for cumulative watershed effects in this analysis. The 6th level HUC scale is recognized by the U.S. Geological Survey and is the commonly accepted scale for determining potential effects of management activities (Regional Interagency Executive Committee 1995). The 6th level HUC scale



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provides boundaries large enough to allow a comprehensive accounting of all activities affecting mainstem streams draining the watersheds, and small enough to allow the analysis to be sensitive to potential effects of the proposed activities.

Temporally, cumulative watershed effects may be influenced by some of the activities summarized in the Kuiu Catalog of Events. In this analysis emphasis was given to timber harvest activities in the past 30 years and road building activities regardless of age, activities which are known to potentially effect changes in peak flow and timing of runoff, and sediment delivery to streams.

## ***Past Activities***

Management-related and naturally occurring activities influencing watershed hydrology were considered. The activities considered from the Kuiu Catalog of Events include road building, timber harvest, APC-related planting projects, road and LTF maintenance, riparian and commercial thinning, channel restoration and large woody debris placements, vegetation improvements following landslides and fire, the Kadake Cabin relocation, the Rocky Pass water line, number and location of known landslides, and miles of NFS and temporary roads including their respective stream crossings.

## ***Current Activities***

Current activities influencing cumulative effects are maintenance of existing roads, revegetation on previously closed roads, and revegetation in managed stands with previous harvest.

## ***Future Activities***

Besides the timber harvest and road building activities analyzed in each alternative below, activities occurring in the foreseeable future that could influence cumulative watershed effects include previously analyzed timber harvest, 2<sup>nd</sup> growth riparian thinning projects in the Saginaw and Kadake watersheds, and closure of select NFS roads. Some of the timber harvest approved under the ROD for the Crane and Rowan Mountain Timber Sales has been harvested. The remainder would include about 51 acres of harvest in the Dean Creek watershed, 326 acres in the Security Creek watershed, 8.5 acres in the Rowan Creek watershed, and 86 acres in the Kadake Creek watershed.

### **3.5.6.2 Timber Harvest and Water Yield**

Timber harvest causes changes in the collection and storage of water in watersheds primarily by affecting canopy interception and evapotranspiration, which can affect the amount of stream discharge. Extensive reduction in plant transpiration rates by vegetation removal

## Issue 4: Cumulative Effects on Watersheds 3

can increase annual water yield, as well as peak flows in small streams, particularly during the driest part of the growing season (Harr et al. 1975, Jones and Grant 1996). Peak flow increases have been demonstrated in small watersheds where as little as 25 percent of vegetation has been completely removed in a single entry (Jones and Grant 1996). However, increases may be undetectable when harvest levels are below 25 percent (Jones and Grant 1996, Beschta et al. 2000).

Hydrologic recovery due to re-growth of vegetation in harvested areas offsets changes in water yield over time. Full hydrologic recovery in the absence of roads is dependent upon re-growth following harvest, and is expected to require between 10 and 30 years in the Pacific Northwest (Hicks et al. 1991(a), Jones 2000).

Potential changes in water yield are assessed for each alternative in the sections that follow. These qualitative assessments are made assuming that 1) cumulative harvest levels affecting less than 25 percent of the total watershed area generally do not cause detectable increases in water yield (Jones and Grant 1996; Beschta et al. 2000), and 2) water yield recovers to pre-harvest levels within 30 years (Hicks et al. 1991(a), Jones 2000).

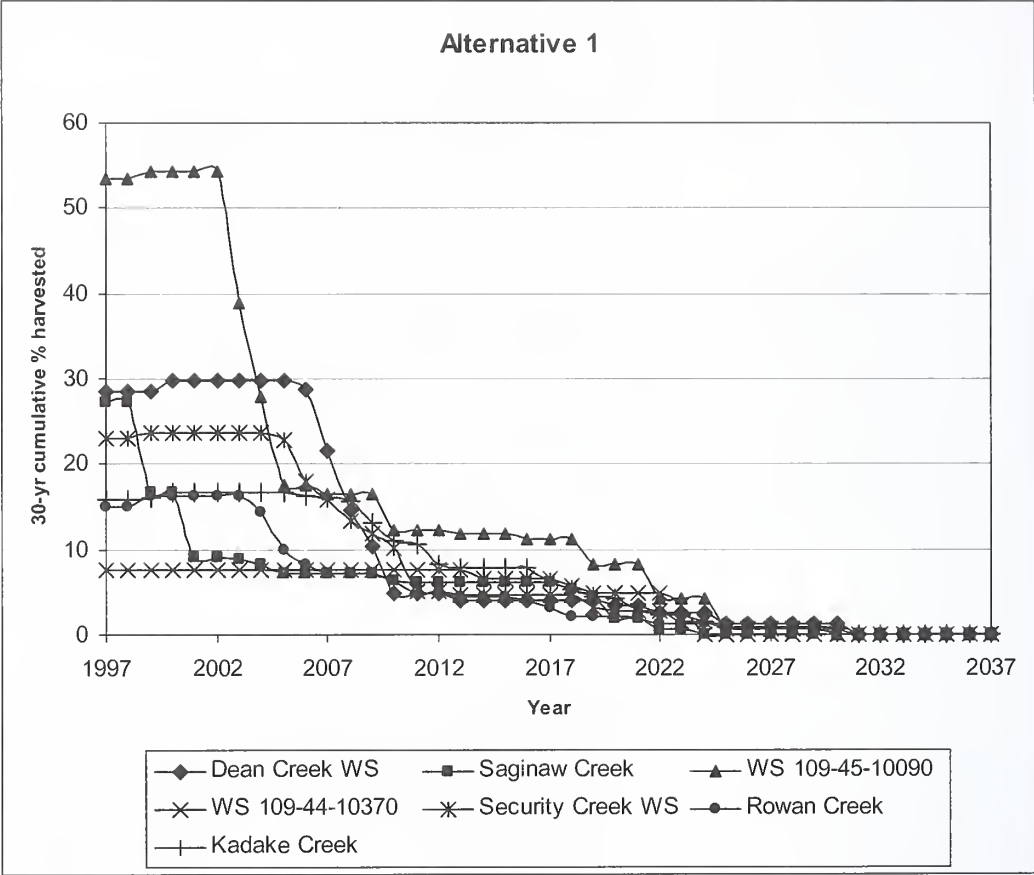
### **3.5.6.3 General Timber Harvest and Watershed Recovery on Kuiu Island**

High rates of timber harvest occurred on Kuiu Island in the 1960s and 1970s, and in the 1980s in the Dean Creek watershed. Research discussed above suggests that timber harvest levels may have caused temporary increases in landslide potential and water yield during certain time periods, and that recovery to pre-harvest conditions is ongoing. Currently, only the Dean Creek watershed has 30-year cumulative harvest levels approaching 25 percent. Regardless of which alternative is selected, 30-year cumulative harvest levels in the Project Area watersheds will decrease rapidly until the year 2010, after which time the 30-year cumulative harvest levels in all watersheds will be well below 20 percent. More specifically, if the No-Action Alternative were implemented, the highest 30-year cumulative harvest levels in any watershed would be about 12 percent in 2010 (Chart 3-1). In comparison, if Alternative 4 were selected, the highest 30-year cumulative harvest levels in any watershed would be about 17 percent by 2010 (Chart 3-2). The sharp decline in 30-year harvest levels happening between years 2001 and 2010 reflects the sharp decline in harvest rates within the Project Area since the 1960s and 1970s.

The general trend in all watersheds is toward recovery of slope stability and pre-harvest rates of canopy interception and evapotranspiration.

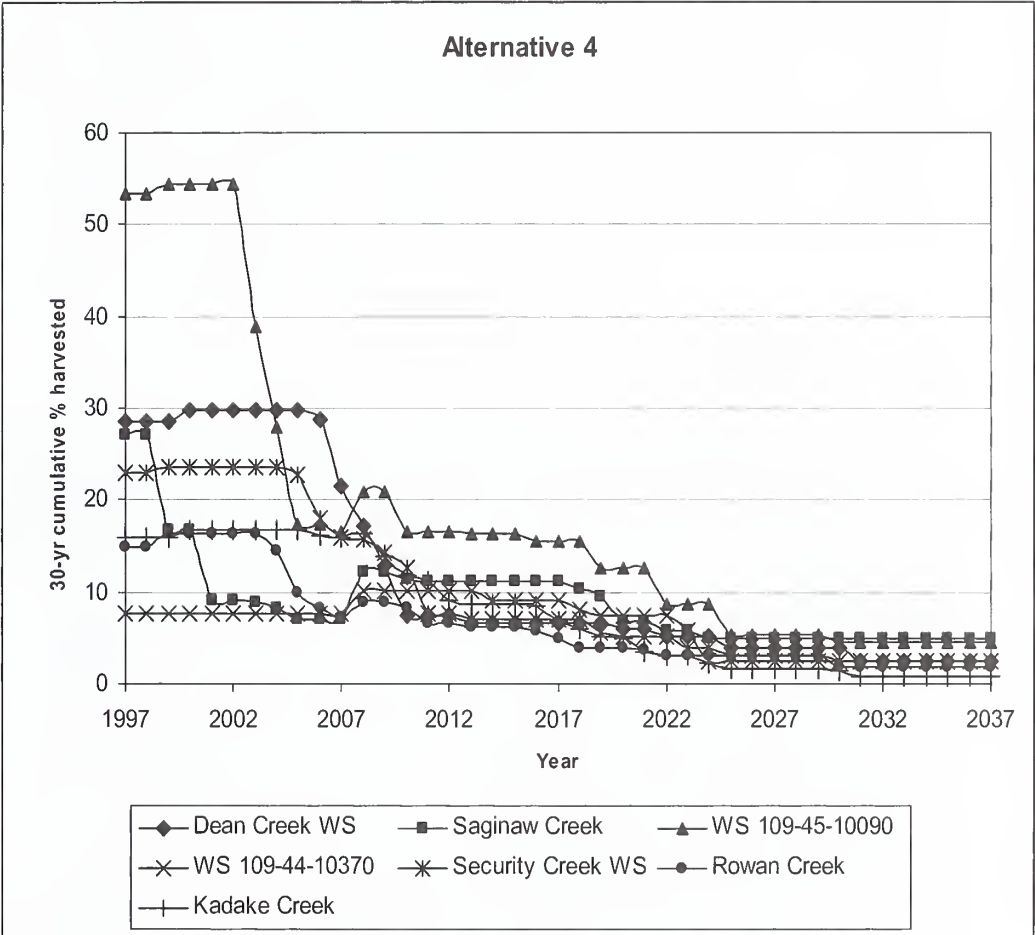
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**Chart 3-1. Change of cumulative harvest levels in the Project Area over 30 years for Alternative 1, the No-Action Alternative. This calculation accounts for unharvested units in the Crane and Rowan Mountain Timber Sales ROD, but does not account for road clearings.**





**Chart 3-2. Change of cumulative harvest levels in the Project Area over 30 years for Alternative 4, the alternative proposing the highest number of acres for harvest. This calculation accounts for unharvested units in the Crane and Rowan Mountain Timber Sales ROD, but does not account for road clearings.**



**3.5.6.4 Sediment Risk and Stream Channel Condition in Kuiu Watersheds**

Generally, observed stream channel conditions were fair, good, or excellent, except for the poor width-to-depth ratio in watershed 109-45-10090, and the poor number of pools per kilometer in the Security Creek and Kadake Creek watersheds. These conditions may be exacerbated if sediment loads in these watersheds are increased.

The current SRI is greater than the inherent SRI in five of the major watersheds within the Project Area (Table 3-36). This reflects the fact that recent timber harvest has increased the risk of landslides in these

### 3 Environment and Effects

watersheds, and that streams in these watersheds may be susceptible to channel changes if landslides do occur. All of the action alternatives would slightly increase the risk of landslides over what would occur naturally, as discussed below under each alternative. Alternative 3 proposes enough timber harvest and road building to further increase the SRI in the Saginaw Creek watershed. Alternatives 4 and 5 propose enough timber harvest and road building to increase the SRI in both the Saginaw Creek and Dean Creek watersheds. Low gradient stream channels in the lower valleys of watersheds with high and very high SRI values have an increased risk of sediment-related changes in channel morphology including channel widening, braiding, and changes to channel roughness, grain size, pool depth and pool frequency. This statement is consistent with research on stream channel morphology and stream channel change associated with increased sediment inputs (Lyons and Beschta 1983, Sullivan et al. 1987, Madej 1999).

**Table 3-36. Current Sediment Risk Index (SRI) in Project Area Watersheds, and SRI after Accounting for Proposed Timber Harvest and Road Construction**

Watershed	Inherent SRI	Current SRI	Alt 2 SRI	Alt 3 SRI	Alt 4 SRI	Alt 5 SRI
Dean Creek	Low	Moderate	Moderate	Moderate	High	High
Saginaw Creek	Moderate	High	High	Very high	Very high	Very high
WS #109-45-10090	Very low	Moderate	Moderate	Moderate	Moderate	Moderate
WS #109-44-10370	Very high	Very high	Very High	Very High	Very High	Very High
Security Creek	Moderate	High	High	High	High	High
Rowan Creek	Very high	Very high	Very high	Very high	Very high	Very high
Kadake Creek	High	Very high	Very high	Very high	Very high	Very high

#### 3.5.7 Cumulative Effects of Roads

Each of the action alternatives described in this section responds to the issue of cumulative watershed effects in similar ways. After the completion of proposed harvest activities, all action alternatives would result in a net decrease in the amount of road needing maintenance due to closure of specific roads in each alternative (see the Transportation section in this chapter). Closure would be accomplished using techniques that may include use of gates, removing culverts and bridges, installing “tank traps” and berm barriers, excavating additional waterbars in the road surface, and allowing vegetation to become re-established on the road and in the road ditch. This would restore more natural drainage patterns and eliminate the risk of road

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failures at stream crossings, culvert plugging, and stream diversion. Natural revegetation would further reduce the risk of sediment delivery to streams.

### 3.5.8 Effects by Alternative

#### 3.5.8.1 Alternative 1 No-Action alternative

##### *Direct and Indirect Effects*

In the No-Action Alternative, no timber harvest would occur, and no roads would be built. Selection of this alternative would not preclude regular maintenance of existing roads, including erosion control measures and removal or replacement of culverts. With periodic road maintenance, sediment delivery to streams from roads is expected to be minor and within water quality standards set by the State of Alaska.

##### *Cumulative Effects*

Cumulative effects associated with the No-Action Alternative are limited to those associated with timber harvest activities that have been previously approved, maintenance of existing roads, growth of trees in managed stands harvested in the past, and reestablishment of more natural drainage patterns and vegetation on closed roads. Under this alternative, no changes in water yield, sediment delivery to streams or fish passage are expected beyond those associated with these activities and naturally occurring events. Most of the timber harvest approved under the ROD for the Crane and Rowan Mountain Timber Sales has been implemented. The remainder of the timber harvest would include about 51 acres of harvest in the Dean Creek watershed, 326 acres in the Security Creek watershed, nine acres in the Rowan Creek watershed, and 86 acres in the Kadake Creek watershed.

#### 3.5.8.2 Alternative 2

##### *Direct and Indirect Effects*

Alternative 2 would harvest 477 acres (Table 3-36). Harvest units included in this alternative would be accessed using the existing NFS roads and 1.5 miles of temporary road that would be decommissioned after timber harvest is complete. This alternative would require new construction of 1.8 miles of NFS road, all of which would be closed following timber harvest. An additional 7.8 miles of currently open NFS roads would be closed following harvest. Yarding systems would include ground-based cable and shovel yarding. This alternative would require the installation of three culverts or bridges on Class I streams, three culverts or bridges on class II streams, 1 culvert on a Class III stream, and 5 culverts on class IV streams (Table 3-57). Culverts or bridges would be removed as a part of decommissioning on temporary roads.



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A direct effect of implementing this alternative would be the temporary increase in sediment delivery to streams due to new road building, new construction on decommissioned roadbeds, bridge construction, and the installation of culverts. Short-term (48 hours) increases in sediment delivery are not expected to degrade water quality or fish habitat.

Alternative 2 proposes 197 acres of clearcut harvest, of which 2.0 acres are on slopes with a high mass movement index (MMI-3). The proposed timber harvest would increase the risk of landslides occurring on these slopes, which lie in the northeast corner of Unit 417. See the Unit Cards in Appendix B and the Soils and Geology section of this chapter for more information on MMI soils. This alternative does not propose any road building on slopes with a gradient over 67 percent.

**Table 3-37. Summary of timber harvest and road building proposed in Alternative 2, and associated changes in cumulative harvest levels.**

Watershed (WS)	ADF&G Number	WS Acres	Existing Condition	Proposed Activities in Alternative 2			
			Cumulative harvest (%) since 1977	Harvest (ac)	New road (mi)	New road <sup>a</sup> (ac)	Cumulative harvest (%)
Dean Creek	109-50-10070	4,690	24	0	0.0	0.0	24.0
Saginaw Creek	109-44-10390	8,302	8	95	0.8	7.4	9.4
Unnamed	109-45-10090	2,140	19	24	0.0	0.0	19.9
Unnamed	109-44-10370	4,992	8	125	0.0	0.0	10.8
Security Creek	109-45-10100	5,931	23	41	0.9	6.2	23.3
Rowan Creek	109-52-10060	13,234	8	68	0.2	1.1	9
Kadake Creek	109-42-10300	32,270	17	124	1.4	8.9	17.7
<b>Total:</b>				<b>477<sup>b</sup></b>	<b>3.3</b>	<b>23.6</b>	

<sup>a</sup>Assumes a 40-foot clearing width for proposed temporary roads and a 75-foot clearing width for newly constructed NFS roads.

<sup>b</sup> Difference in total acres harvested for alternative due to rounding.

#### ***Cumulative Effects***

Cumulative effects include the reasonably foreseeable future harvest of remaining units and associated road clearing from the Crane and Rowan Mountain Timber Sales EIS. Harvest of 477 acres within the Project Area would increase cumulative harvest levels in the Saginaw

## Issue 4: Cumulative Effects on Watersheds 3

Creek, Security Creek, Rowan Creek, and Kadake Creek watersheds and in watersheds #109-45-10090 and #109-44-10370 (Table 3-37). Dean Creek watershed (in which no harvest is proposed) would have a 30-year cumulative harvest level of 24 percent (including roads). If Alternative 2 were implemented, and completed by 2008, all watersheds within the Project Area would have 30-year cumulative harvest levels below 14 percent by 2010.

This alternative addresses cumulative effects associated with roads by closing 7.8 miles of currently open NFS roads (Forest Roads 6413 (2.8 miles), 46096 (3.6) miles, 46021 (1.4 miles)). This would result in a decrease of 4.8 miles of currently open NFS road in the Saginaw Creek watershed, 1.4 miles in watershed #109-45-10090, and 1.6 miles in watershed #109-44-10370. Closing roads would be accomplished using techniques that may include use of gates, removing culverts and bridges, installing “tank traps” and berm barriers, excavating additional waterbars in the road surface, and allowing vegetation to become reestablished on the road and in the road ditch. This restores more natural drainage patterns and eliminates the risk of road failures at stream crossings, culvert plugging, and stream diversion. Natural revegetation further reduces the risk of sediment delivery to streams.

### 3.5.8.3 Alternative 3

#### *Direct and Indirect Effects*

Alternative 3 would harvest 786 acres (Table 3-38). Harvest units included in this alternative would be accessed using the existing NFS roads and 2.1 miles of temporary road. This alternative would require new construction on 5.4 miles of road, all of which would be closed following timber harvest (Table 3-38). An additional 8.0 miles of currently open NFS roads would be closed following harvest. Yarding systems would include only ground-based cable and shovel yarding. This alternative would require the installation of two culverts or bridges on Class I streams, four culverts or bridges on Class II streams, eight culverts or bridges on Class III streams, and 19 culverts or bridges on Class IV streams (Table 3-57). These culverts or bridges would be removed after the completion of harvest activities on decommissioned temporary roads.

A direct effect of implementing this alternative would be the temporary increase in sediment delivery to streams due to new road building, new construction on decommissioned temporary old roadbeds, bridge construction, and the installation of culverts. Short-term increases in sediment delivery (48 hours) are not expected to degrade water quality or fish habitat.

Alternative 3 proposes 409 acres of clearcut harvest, none of which will occur on slopes with a high or extreme mass movement index

# 3 Environment and Effects

(MMI-3 or MMI-4). The proposed timber harvest would increase the risk of landslides occurring on these slopes. This alternative does not propose any road building on slopes with a gradient over 67 percent.

## ***Cumulative Effects***

Cumulative effects include the reasonably foreseeable future harvest of remaining units and associated road clearing from the Crane and Rowan Mountain Timber Sales EIS. Harvest of 786 acres within the Project Area would increase cumulative harvest levels in the Saginaw Creek, Security Creek, Rowan Creek, and Kadake Creek watersheds and in watershed #109-44-10370 (Table 3-38). Of the watersheds within the Project Area, Dean Creek has the highest 30-year cumulative harvest percent of 24 percent (including roads).

If Alternative 3 were implemented, increases in cumulative harvest levels in Security Creek may result in slight increases in water yield. However, any increase in water yield would be short-lived due to the ongoing regrowth of trees in stands harvested over a period of decades. If alternative 3 were implemented and completed by 2008, all watersheds within the Project Area would have 30-year cumulative harvest levels below 12 percent by 2010.

This alternative addresses cumulative effects associated with roads by closing 8.0 miles of currently open NFS roads after accessing units on them; Forest Roads 6413 (2.8 miles), 46096 (3.6 miles), and 6418 (1.6 miles). This would result in a decrease of 6.4 miles of open NFS road in the Saginaw Creek watershed, and 1.6 miles in WS #109-44-10370. Closing roads involves using techniques that may include use of gates, removing culverts and bridges, installing “tank traps” and berm barriers, excavating additional waterbars in the road surface, and allowing natural vegetation to become reestablished on the road and in the road ditch. This restores more natural drainage patterns and eliminates the risk of road failures at stream crossings, culvert plugging, and stream diversion. Natural revegetation further reduces the risk of sediment delivery to streams.



**Table 3-38. Summary of timber harvest and road building proposed in Alternative 3, and associated changes in cumulative harvest levels.**

Watershed (WS)	ADF&G Number	WS Acres	Existing Condition	Proposed Activities in Alternative 3			
			Cumulative harvest (%) since 1977	Harvest (ac)	New Road (mi)	New Road (ac) <sup>a</sup>	Cumulative harvest (%)
Dean Creek	109-50-10070	4,690	24	0	0.0	0.0	24.0
Saginaw Creek	109-44-10390	8,302	8	330	2.7	19.3	12.4
Unnamed	109-45-10090	2,140	19	0	0.0	0.0	18.8
Unnamed	109-44-10370	4,992	8	115	0.0	0.0	10.6
Security Creek	109-45-10100	5,931	23	100	1.5	12.6	24.4
Rowan Creek	109-52-10060	13,234	8	115	0.1	0.7	8.8
Kadake Creek	109-42-10300	32,270	17	126	3.2	26.5	17.8
<b>Total:</b>				<b>786</b>	<b>7.5</b>	<b>59.1</b>	

<sup>a</sup> Assumes a 40-foot clearing width for proposed temporary roads and a 75-foot clearing width for newly constructed NFS roads.

## 3.5.8.4 Alternative 4

### *Direct and Indirect Effects*

Alternative 4 would harvest 1,387 acres (Table 3-39). Harvest units included in this alternative would be accessed using the existing NFS roads and 3.9 miles of temporary road. This alternative would require new construction of 6.4 miles of NFS road, all of which would be closed following timber harvest (Table 3-39). An additional 10.6 miles of currently open NFS roads would be closed following harvest. Yarding systems would include helicopter yarding, cable yarding, and shovel yarding. This alternative would require the installation of three culverts or bridges on Class I streams, five culverts or bridges on Class II streams, 14 culverts or bridges on Class III streams, and 19 culverts or bridges on Class IV streams (Table 3-57). These culverts or bridges would be removed after the completion of harvest activities on decommissioned temporary roads.

A direct effect of implementing this alternative would be the temporary increase in sediment delivery to streams due to new road building, road reconditioning, bridge construction, and the installation

### 3 Environment and Effects

of culverts. Short-term (48 hrs.) increases in sediment delivery are not expected to degrade water quality or fish habitat.

**Table 3-39. Summary of timber harvest and road building proposed in Alternative 4, and associated changes in cumulative harvest levels.**

Watershed (WS)	ADF&G Number	WS Acres	Existing	Proposed Activities in Alternative 4			
			Cumulative harvest (%) since 1977	Harvest (ac)	New road (mi)	New road <sup>a</sup> (ac)	Cumulative harvest (%)
Dean Creek	109-50-10070	4,690	24	120	0.6	4.1	26.7
Saginaw Creek	109-44-10390	8,302	8	416	1.9	12.5	13.3
Unnamed	109-45-10090	2,140	19	96	0.5	3.8	23.4
Unnamed	109-44-10370	4,992	8	125	0.0	0.0	10.8
Security Creek	109-45-10100	5,931	23	144	1.8	15.0	25.2
Rowan Creek	109-52-10060	13,234	8	236	1.2	7.2	9.8
Kadake Creek	109-42-10300	32,270	17	249	4.3	34.7	18.2
<b>Total:</b>				<b>1,387</b>	<b>10.3</b>	<b>77.3</b>	

<sup>a</sup> Assumes a 40-foot clearing width for proposed temporary roads and a 75-foot clearing width for newly constructed NFS road.

Alternative 4 proposes 1,025 acres of clearcut harvest, of which about 14 acres are on slopes with an extreme mass movement index, MMI-4 (see the Soils and Geology section in this Chapter). These slopes are located in Unit 101 along the western edge of the unit where there are no streams. The proposed timber harvest would increase the risk of landslides occurring on these slopes, however because there are no streams a slide would not increase sedimentation (see the Unit Cards in Appendix B and Soil and Geology section of this chapter). A Soils Stability Investigation Report was completed with a site visit in which it was determined that this area showed no signs of instability and was suitable for harvest. This alternative does not propose any road building on slopes with a gradient over 67 percent.

#### **Cumulative Effects**

Cumulative effects include the reasonably foreseeable future harvest of remaining units and associated road clearing from the Crane and Rowan Mountain Timber Sales EIS. Harvest of 1,387 acres within the Project Area would increase cumulative harvest levels in all watersheds within the Project Area (Table 3-39). Of the watersheds

## Issue 4: Cumulative Effects on Watersheds 3

within the Project Area, only the Dean Creek and the Security Creek watersheds would have a 30-year cumulative harvest level above 20 percent (including roads).

If Alternative 4 were implemented, increases in cumulative harvest levels in Dean Creek, Security Creek, and watershed #109-45-10090 may result in slight increases in water yield. However, any increase in water yield would be short-lived due to the ongoing re-growth of trees in stands harvested over a period of decades.

This alternative addresses cumulative effects associated with roads by closing 10.6 miles of currently open NFS roads after accessing units on them; Forest Roads 6413 (2.8 miles), 46096 (3.6 miles), 6427 (1.1 miles), 46021 (1.4 miles), and 6418 (1.6 miles). This would result in a decrease of 6.4 miles of open NFS road in the Saginaw Creek watershed, 1.0 mile of road in the Dean Creek watershed, 1.5 miles of road in watershed 109-45-10090 and 1.6 miles in WS #109-44-10370. Closing roads involves using techniques that may include use of gates, removing culverts and bridges, installing “tank traps” and berm barriers, excavating additional waterbars in the road surface, and allowing natural vegetation to become reestablished on the road and in the road ditch. This restores more natural drainage patterns and eliminates the risk of road failures at stream crossings, culvert plugging, and stream diversion. Natural revegetation further reduces the risk of sediment delivery to streams.

### **3.5.8.5 Alternative 5**

#### ***Direct and Indirect Effects***

Alternative 5 would harvest 1,208 acres (Table 3-40). Harvest units included in this alternative would be accessed using the existing NFS roads and 3.5 miles of temporary road. This alternative would require new construction of 6.5 miles of NFS road, all of which would be closed following timber harvest (Table 3-40). An additional 10.5 miles of currently open NFS roads would be closed following harvest. Yarding systems would include only ground-based cable and shovel yarding. This alternative would require the installation of three culverts or bridges on Class I streams, five culverts or bridges on Class II streams, 15 culverts or bridges on Class III streams, and 19 culverts or bridges on Class IV streams (Table 3-57). These culverts or bridges would be removed after the completion of harvest activities on decommissioned temporary roads.

A direct effect of implementing this alternative would be the temporary increase in sediment delivery to streams due to new road building, road reconditioning, bridge construction, and the installation of culverts. Short-term increases in sediment delivery are not expected to degrade water quality or fish habitat.



### 3 Environment and Effects

Alternative 5 proposes 1,208 acres of clearcut harvest, of which about 20 acres are on slopes with a high or extreme mass movement index (MMI-3 or MMI-4) (see the Soils and Geology section in this Chapter). These include about 16 acres of MMI-4 soils in Unit 101 along the western edge of the unit where there are no streams, and in an area drained by Class III and Class IV streams in the southeast corner. Clearcut harvest is also proposed on about 2 acres of MMI-4 soils along a large v-notch that creates the southern boundary of Unit 401, and on about 2 acres of MMI-3 soils in the northeast corner of Unit 417 along a stream. A Soils Stability Investigation Report was completed with a site visit in which it was determined that this area showed no signs of instability and was suitable for harvest. This alternative does not propose any road construction on slopes with a gradient over 67 percent.

**Table 3-40. Summary of timber harvest and road building proposed in Alternative 5, and associated changes in cumulative harvest levels.**

Watershed (WS)	ADF&G Number	WS Acres	Existing Condition	Proposed Activities in Alternative 5			
			Cumulative harvest (%) since 1975	Harvest (ac)	New Road (mi)	New Road <sup>a</sup> (ac)	Cumulative harvest (%)
Dean Creek	109-50-10070	4,690	24	120	0.7	4.1	26.7
Saginaw Creek	109-44-10390	8,302	8	313	2.6	19.3	12.2
Unnamed	109-45-10090	2,140	19	96	0.4	3.8	23.4
Unnamed	109-44-10370	4,992	8	125	0.0	0.0	10.8
Security Creek	109-45-10100	5,931	23	144	1.8	15.0	25.2
Rowan Creek	109-52-10060	13,234	8	260	1.2	7.2	10.0
Kadake Creek	109-42-10300	32,270	17	150	3.2	26.5	17.9
<b>Total:</b>				<b>1,208</b>	<b>9.9</b>	<b>75.9</b>	

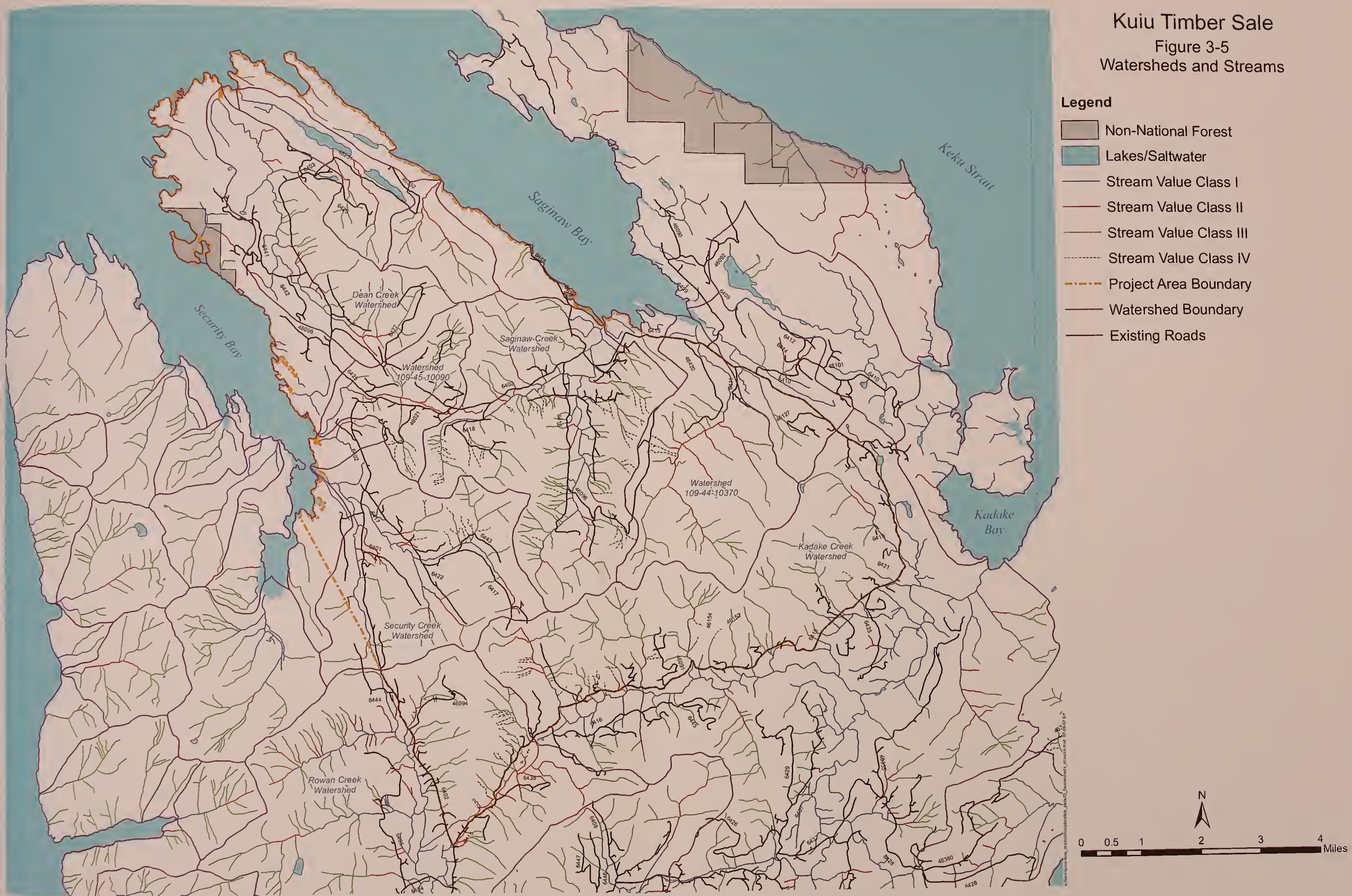
<sup>a</sup>

Assumes a 40-foot clearing width for proposed temporary roads and a 75-foot clearing width for newly constructed NFS roads.





Kuiu Timber Sale  
Figure 3-5  
Watersheds and Streams





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# Kuiu Timber Sale

Figure 3-6  
Managed Stands, Roads, Landslides

## Legend

- Harvested Between 1911-1959
- Harvested Between 1960-1969
- Harvested Between 1970-1979
- Harvested Between 1980-1989
- 1990 - Present
- Non-National Forest
- Stream Value Class I & II
- Existing Open Roads
- Project Area Boundary
- 500ft Contour Interval
- Watershed Boundary
- Slides (From 1998 Aerial Photos)







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### ***Cumulative Effects***

Cumulative effects include the reasonably foreseeable future harvest of remaining units and associated road clearing from the Crane and Rowan Mountain Timber Sales EIS. If Alternative 5 were implemented and 1,208 acres were harvested, the cumulative harvest levels in all watersheds within the Project Area would increase. Of the watersheds within the Project Area, the Dean Creek watershed, the Security Creek watershed, and watershed #109-45-10090 would have a 30-year cumulative harvest level above 20 percent (including roads).

If Alternative 5 were implemented, increases in cumulative harvest levels in Dean Creek, Security Creek, and watershed #109-45-10090 may result in slight increases in water yield. However, any increase in water yield would be short-lived due to the ongoing re-growth of trees in stands harvested over a period of decades.

This alternative addresses cumulative effects associated with roads by closing 10.6 miles of NFS roads after accessing units on them; Forest Roads 6413 (2.8 miles), 46096 (3.6 miles), 6427 (1.1 miles), 46021 (1.4 miles), and 6418 (1.6 miles). This would result in a decrease of 6.4 miles of open road in the Saginaw Creek watershed, 1.0 mile of road in the Dean Creek watershed, 1.5 miles of road in watershed 109-45-10090 and 1.6 miles in WS #109-44-10370. Closing roads involves using techniques that may include use of gates, removing culverts and bridges, installing “tank traps” and berm barriers, excavating additional waterbars in the road surface, and allowing natural revegetation on the road and in the road ditch. This restores more natural drainage patterns and eliminates the risk of road failures at stream crossings, culvert plugging, and stream diversion. Natural revegetation further reduces the risk of sediment delivery to streams.

## 3.6 Alaska Region Threatened, Endangered, Candidate, and Sensitive Species

### 3.6.1 Introduction

Federally listed threatened and endangered species are those plant and animal species formally listed by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) under authority of the Endangered Species Act of 1973, as amended. Under the Endangered Species Act, an endangered species is defined as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as one that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. USFWS defines a candidate species as a species for which there is on file sufficient information on biological vulnerability and threat(s) to support proposals as threatened or endangered.

The Regional Forester of the USDA Forest Service has the authority to designate species as “sensitive.” Sensitive species are those plant and animal species for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species’ existing distribution. Information on threatened, endangered, candidate, and sensitive species distributions and occurrences in the Project Area was obtained from agency contacts, a review of the available literature on these species in Southeast Alaska, and field review by interdisciplinary survey teams.

A Biological Evaluation (BE) was completed to determine whether the Kuiu Timber Sale may affect federally listed or sensitive species. The document was prepared in accordance with legal requirements set under Section 7 of the Endangered Species Act of 1973 (19 U.S.C. 1536 (c)), and follows standards established in Forest Service Manual (FSM) direction (2672.42) and the Code of Federal Regulations (50 CFR 402). The BE is available from the Kuiu Timber Sale planning record. Findings are summarized below.

### 3.6.2 Threatened, Endangered and Candidate Species

#### 3.6.2.1 Wildlife Species

##### ***Alaska Region threatened endangered, candidate, and sensitive species wildlife species***

Table 3-41 displays the potential habitat for the Alaska Region’s threatened, endangered, candidate, and sensitive wildlife species within the Project Area. The Forest Service consulted with the



USFWS and the NMFS as part of this analysis. No terrestrial species listed by the USFWS as threatened, endangered, or candidate species are known to occur within the Project Area.

**Table 3-41. Federally listed threatened, endangered, and candidate wildlife species, and Alaska Region sensitive wildlife species potential habitat within the Kuiu Timber Sale Project Area**

US Fish & Wildlife Service and National Marine Fisheries Listed Species (T, E, & C)	Potential Habitat in Project Area	Carried Forward For Analysis
<b>Humpback Whale (Endangered)<sup>a</sup></b>	NO	NO. Waters adjacent to the Project Area are outside known concentration areas. No effects are expected.
<b>Snake River Sockeye (Endangered)</b>	NO	NO. Habitat or individuals do not occur in Project Area. Compliance with TLMP standards and guidelines. No effects are expected.
<b>Steller's Sea Lion (Threatened)<sup>a</sup></b>	NO	NO. There is no critical habitat within or near the Project Area. No effects are expected.
<b>Snake River Spring/Summer Chinook (Threatened)</b>	NO	NO. Habitat or individuals do not occur in Project Area. Compliance with TLMP standards and guidelines. No effects are expected.
<b>Snake River Fall Chinook (Threatened)</b>	NO	NO. Habitat or individuals do not occur in the Project Area. Compliance with TLMP standards and guidelines. No effects are expected.
<b>Kittlitz's Murrelet (<i>Brachyramphus brevirostris</i>) (Candidate)</b>	NO	NO. Habitat or individuals do not occur in the Project Area.
Alaska Region Sensitive Species	Potential Habitat in Project Area	Carried Forward for Analysis
<b>Northern Goshawk (<i>Accipiter gentilis</i>)</b>	YES	YES.
<b>Trumpeter Swan (<i>Olor buccinator</i>)</b>	NO	NO. Habitat does not occur in the Project Area.
<b>Osprey (<i>Pandion haliaetus</i>)</b>	YES	NO. Habitat is not affected by proposed activities.
<b>Peale's Peregrine Falcon (<i>Falco peregrinus pealei</i>)</b>	NO	NO. Habitat does not occur in the Project Area.

<sup>a</sup> Appendix J of the 1997 Forest Plan Final EIS includes a Biological Assessment for the humpback whale and Steller's sea lion that are found in waters of Southeast Alaska. The Forest Plan includes appropriate standards and guidelines for management operations within the waters of Southeast Alaska when these species could be affected, such as in the vicinity of sea lion haul outs.

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No federally listed threatened or endangered animal species would be adversely affected by the proposed actions. The Forest Service has prepared a complete Biological Evaluation for these species located in the Kuiu Timber Sale planning record (see the Wildlife Biological Evaluation available in the Kuiu Timber Sale planning record for more information).

#### ***Sensitive Species***

The northern goshawk, trumpeter swan, and Peale's peregrine falcon are Alaska Region sensitive species known to occur on Kuiu Island, but only the northern goshawk is documented to occur within the Project Area. There is no habitat within or near the Project Area for Peale's peregrine falcon and while Kuiu Island has potential habitat for osprey, there is no evidence that this rare migrant to central Southeast Alaska uses Kuiu Island.

The Forest Plan provides standards and guidelines for the protection of these species. If sensitive species' nests are located, the Forest Plan Standards and Guidelines will be implemented.

#### **Northern Goshawk**

Field surveys have been conducted since the 1993 field season. There are ten known nesting locations on Kuiu Island. Of the ten nests located, two are within the Project Area.

A nest site in the Rowan Bay drainage was first discovered in 1993. The area was surveyed in 1998, 1999, 2000, 2002, 2004, and 2005 and no activity was observed during the surveys. In the 2004 and 2005 surveys, the nest structure was found to be in poor condition.

A nest site in Security Bay was active starting in 1997. In 2003 and 2004 it was surveyed for goshawk nesting activity. In 2003 two plucks (varied thrush) were found in the vicinity, but no other evidence of goshawk activity was observed. In 2004 the nest was found to be unoccupied and in poor condition.

The standards and guidelines applied to the management activities meet the requirements of the Forest Plan. The Rowan Bay nest is protected by a buffer of suitable habitat greater than 100 acres. The Security Bay nest does not require a buffer, as it is located within a medium old-growth habitat reserve and is protected from timber harvest activities.

### 3.6.2.2 Plant Species

#### ***Federally listed plant species***

In the State of Alaska, one plant species is federally listed: the endangered fern *Polystichum aleuticum*, known only from Adak Island in the Aleutians. No federally listed or proposed plant species are known or suspected to occur on Kuiu Island.

#### ***Alaska Region listed sensitive plant species***

The Alaska Region lists 19 plant species as sensitive. There are three known and nine suspected plant species on the Petersburg Ranger District of the Tongass National Forest where the Project Area is located (Figure 1-1 and Table 3-42). More information is in the Plant Biological Evaluation located in the Kuiu Timber Sale planning record.

All three of sensitive plant species found on the Petersburg Ranger District are known to occur on Kuiu Island. Loose-flowered bluegrass (*Poa laxiflora*) has been documented on several upper beaches in the wilderness areas 15-20 miles south of the Project Area and along one stream on north Kuiu Island within the Project Area. Davy mannagrass (*Glyceria leptostachya*) has been found along a stream bank near the Affleck Portage Trail, which is about 25 miles south of the Project Area. Wright filmy fern (*Hymenophyllum wrightii*) was found in Port Beauclerc during a wilderness plant survey in early July 2007. Port Beauclerc is about 30 miles south of the Project Area.

Until 2006, the Wright filmy fern had only been found on two sites on Mitkof Island in the 1960s. In 2006, new information on how to locate the species led to finding the fern at three new sites on Mitkof. The fern was also documented on Kupreanof and Etolin Islands in the summer of 2006. As of spring 2007, no additional surveys for the fern were conducted in the Project Area using the new search knowledge.

Sensitive plant surveys for the Project Area were conducted in 24 out of 38 of the proposed units during the summers of 2003 and 2004 within habitats and microsites where activities were planned and sensitive plants were most likely to be found. These sites included wet seeps, wet meadows, stream banks, and rocky areas. Also, dark, damp areas on downed logs and at the base of trees were searched for Wright filmy fern. Areas with limestone substrates were also targeted in the surveys. Approximately 50 percent of the proposed roads were also surveyed. Areas outside of the proposed units, but within the Project Area, were not surveyed except for the road leading to Units 402 and 403. One sensitive plant species was found, loose-flowered blue grass (*Poa laxiflora*), along a stream below Unit 307. The population consisted of about 25 individual plants on a rocky area near the edge



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of the stream. The plants are within the riparian buffer on the stream so they are not within a proposed harvest unit. Unit 307 is proposed in Alternatives 3, 4 and 5.

Rare plants were also recorded during the plant surveys. One rare plant, *Botrichium multifidum*, was found near the proposed road leading to Unit 419. The unit and road were later dropped due to high vulnerability karst in the area. No other rare plants were found.

**Table 3-42. Current Alaska Region sensitive plant species known or suspected to occur on Petersburg Ranger District**

Common Name	Scientific Name	Habitat description
Goose-grass sedge	<i>Carex lenticularis</i> var. <i>dolia</i>	Wet meadows, snowbed edges, and lakeshores in alpine areas
Edible thistle	<i>Cirsium edule</i>	Wet meadows (muskegs) and open forests
Davy mannagrass	<i>Glyceria leptostachya</i>	Wet areas, usually along streams, ponds, and lake margins
Wright filmy fern	<i>Hymenophyllum wrightii</i>	On the base of trees and rock outcrops in damp humid woods
Truncate quillwort	<i>Isoetes truncata</i>	Immersed in shallow freshwater pools
Calder lovage	<i>Ligusticum calderi</i>	Alpine and margins of subalpine and mixed conifer stands, on limestone
Bog orchid	<i>Platanthera gracilis</i>	Wet meadows and wet open habitats
Loose-flowered bluegrass	<i>Poa laxiflora</i>	Moist lowland woods, open-forested meadows, upper beaches, along streams
Kamchatka alkali grass	<i>Puccinellia kamtschatica</i>	Wet areas and sea beaches
Unalaska mist-maid	<i>Romanzoffia unalaschcensis</i>	Rock outcrops, along stream banks, beach terraces, and open rocky areas
Queen Charlotte butterweed	<i>Senecio moresbiensis</i>	Alpine and subalpine with open, rocky, or boggy slopes, grassy talus slopes, or rocky heaths. Usually on limestone
Circumpolar starwort	<i>Stellaria ruscifolia</i> spp. <i>aleutica</i>	Moist, gravelly sites and along creeks in mountains

### 3.6.3 Conclusions

#### 3.6.3.1 Direct and Indirect Effects

##### *Wildlife Species*

There would be no effects on any threatened, endangered, or sensitive wildlife species other than the goshawk for any of the alternatives. For goshawk, proposed timber harvest and road building activities in the Project Area may impact individuals but are not likely to cause a trend toward federal listing or a threat to population viability. Goshawk nesting and foraging habitat would be reduced in all action alternatives. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. Application of Forest Plan Standards and Guidelines will ensure that no known goshawk nest sites would be disturbed by any of the proposed activities.

##### *Plant Species*

The proposed timber harvest activities in the Project Area would not have any direct effects on threatened, endangered, and sensitive plant species. One sensitive plant species, Loose-flowered bluegrass (*Poa laxiflora*), was found within the Project Area. It would not be directly affected by the proposed alternatives since it is within a riparian buffer along a stream that is outside any proposed harvest units or proposed road construction or reconstruction. The nearest proposed units are Units 307 and 308 which are across the stream and uphill from the site. These units are proposed in Alternatives 3, 4 and 5.

*Poa laxiflora* populations have been documented in over 40 locations on the Tongass with over 30 of those populations located on Kuiu Island. Most populations are in the beach fringe buffer and Wilderness areas which would not be affected by timber harvest. Even if the population were indirectly affected by blowdown in a riparian buffer, individual plants may be adversely impacted, but the event is not likely to result in loss of viability or cause a trend to federal listing. Potential indirect effects would not significantly add to cumulative impacts for the species since it is relatively common and mostly protected from adverse activities due to its likely habitat.

There is a possibility that undocumented sensitive species could be impacted by the proposed project. The project may adversely impact individual plants, but it is not likely to result in a loss of viability or cause a trend to federal listing.

#### 3.6.3.2 Cumulative Effects

The Catalog of Events for Kuiu Island was referenced to determine cumulative effects. There are no anticipated cumulative effects for all

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listed wildlife and plant species, with the exception of goshawk, including the reasonably foreseeable future harvest of 482 acres from the remaining Crane and Rowan Mountain Timber Sales EIS units.

With the harvest of the reasonably foreseeable future acres, the cumulative harvest within the Project Area would be between 31 percent (No-Action alternative) and 36 percent (Preferred Alternative). For goshawk, the Forest Plan projects that VCUs reaching a harvest level of at least 47 percent of their original productive old-growth (POG) may have an elevated risk of not sustaining goshawks in the VCU, unless at least 6,700 acres of POG remain in the VCU. As indicated above, the Project Area is still well below the 47 percent harvest level, and while the cumulative effects of all activities within the Project Area may impact individuals, it is not expected to contribute to a trend towards federal listing or cause a loss of viability to the goshawk population.



### **3.7.1 Old-Growth Forest Habitat Conservation Strategy**

## **3.7 Wildlife**

The Forest Plan contains a comprehensive conservation strategy to assure viable and well-distributed wildlife populations (Forest Plan FEIS Appendix, Volume 4, Appendix N 1997). There are two components to this strategy: (1) establishment of a system of small, medium, and large OGRs, and other non-development LUDs; and (2) management of the matrix of lands where development that would alter the old-growth forest ecosystem is allowed (productive old-growth). Connectivity is provided by a combination of non-development LUDs, such as small OGRs, Wilderness, beach and estuary fringe, and riparian management areas.

### **3.7.1.1 Large and Medium Old-growth Habitat Reserves**

Currently there is one large OGR on Kuiu Island in the Tebenkof/South Kuiu Wilderness Area, south of the Project Area. Three medium OGRs, two are adjacent to the Project Area, one in VCUs 400 and 401, and the other in VCUs 428 and 429. Three small OGRs are within, or adjacent to, the Project Area. They are located in VCUs 398, 399, and 402 (Figure 3-8).

### **3.7.1.2 Small Old-growth Habitat Reserves**

Small reserves serve two principal functions:

- act as corridors for habitat connectivity between large and medium reserves, and
- serve as functional habitat for species less able to disperse between larger reserves, specifically the flying squirrel, a species closely associated with mature forests.

### **3.7.1.3 Design Options for the Small OGRs**

In a meeting with the Forest Service (December 1, 1998 in Petersburg, Alaska), the U.S. Fish and Wildlife Service (USFWS) and the Alaska Department of Fish and Game (ADF&G) expressed concerns about the size, shape, and connectivity of the small OGRs on Kuiu Island, and options were designed for the OGRs of concern. An additional meeting and field trip to Kuiu Island took place in 2004 to review the proposed OGR changes suggested in the December 1998 meeting. The agency representatives agreed concurred with recommendations. This process is documented in “Revision to Existing Small Old-Growth Habitat Reserves (OGRs) on Kuiu Island” and is included in the planning record for this project.

Two options for the small OGR in VCUs 398, 399 and 404 were compared in detail using the criteria from Appendix K of the Forest Plan (Tables 3-12 through 3-14 and Figure 3-8). The options include

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the original Forest Plan design, Option 1, and the design developed by USFWS, ADF&G, and the Forest Service during the 1998 meeting, Option 2. Either option for each VCU would maintain connectivity to other OGRs.

### ***Keku Small OGR (VCU 398)***

#### **Option 1 VCU 398**

This is the existing small OGR identified in the Forest Plan. It meets the objectives of the standards and guidelines as designed, contains the largest block of old growth within the watershed and maintains connectivity to other OGRs. However, its shape is linear, and it includes more acres of timber harvest than Option 2.

#### **Option 2 VCU 398**

Option 2 would increase the amount of POG from the original OGR design by approximately 54 acres by expanding the western boundary to make it more circular. It would still contain the largest block of old growth within the watershed and maintain connectivity to other OGRs. Table 3-43 and Figure 3-8 compare the Forest Plan small OGR with the proposed OGR for VCU 398.

### ***Saginaw Small OGR (VCU 399)***

#### **Option 1 VCU 399**

This is the existing small OGR identified in the Forest Plan. The Forest Plan small OGR did not meet Appendix K criteria for total acreage.

#### **Option 2 VCU 399**

Option 2 would expand the OGR boundary to the south to meet the Recreational River corridor, which maintains connectivity through a travel corridor out of the VCU. This design excludes the small islands off the coast of Kuiu Island which increases the fragmentation of Option 1 OGR. Table 3-44 and Figure 3-8 display the small OGR options for VCU 399.

### ***Rowan Small OGR (VCU 402)***

#### **Option 1 VCU 402**

This is the existing small OGR identified in the Forest Plan. The Forest Plan small OGR did not meet Appendix K criteria for total acreage.

#### **Option 2 VCU 402**

The boundary would be adjusted to exclude as many managed stands as possible. The overall size would be increased to meet minimum OGR size requirements. Table 3-45 and Figure 3-8 display the small OGR options for VCU 402.

**Table 3-43. Small old-growth habitat reserve options for VCU 398**

		Option 1	Option 2
<b>General Criteria</b>			
Total acres - should be at least 2,112 acres <sup>a</sup>		2,244	2,472
Acres of POG – should be at least 1,056 acres <sup>b</sup>		1,150	1,204
Shape		Linear	More Circular
Acres of early seral habitat included		215	126
Miles of NFS road included		0.13	1.09
<b>Site-specific Factors</b>			
Acres of important deer winter range (HSI 0.6-1.0)		412	391
Acres of high value marten habitat (HSI 0.9 – 1.0)		391	413
Total acres of high volume strata		411	387
Total acres of medium volume strata		386	323
Total acres of low volume strata		535	494
Total acres below 1500 ft. elevation		2,244	2,472
Total acres below 800 ft. elevation		2,244	2,472
Contains the largest blocks of contiguous old-growth within a watershed?		Yes	Yes
Known or suspected goshawk nesting habitat		Yes	Yes
Connectivity to other OGRs		Yes	Yes
Suspected marbled murrelet nesting habitat		Yes	Yes
Rare features	Acres of coarse canopy forest	81	67

<sup>a</sup> 16 percent of VCU acres need to be within the small OGR

<sup>b</sup> 50 percent of the 16 percent must be in POG



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OGRs (Tables 3-43 to 3-45). The adjustments to boundaries in the Option 2 designs change acres from a non-development LUD to a resource development LUD or from a development LUD to a non-development LUD. The adjustments to the Option 2 designs also change the net acres suitable for timber management. The net change would be a loss of 1,030 acres from development LUDs.

**Table 3-44. Small old-growth habitat reserve options for VCU 399**

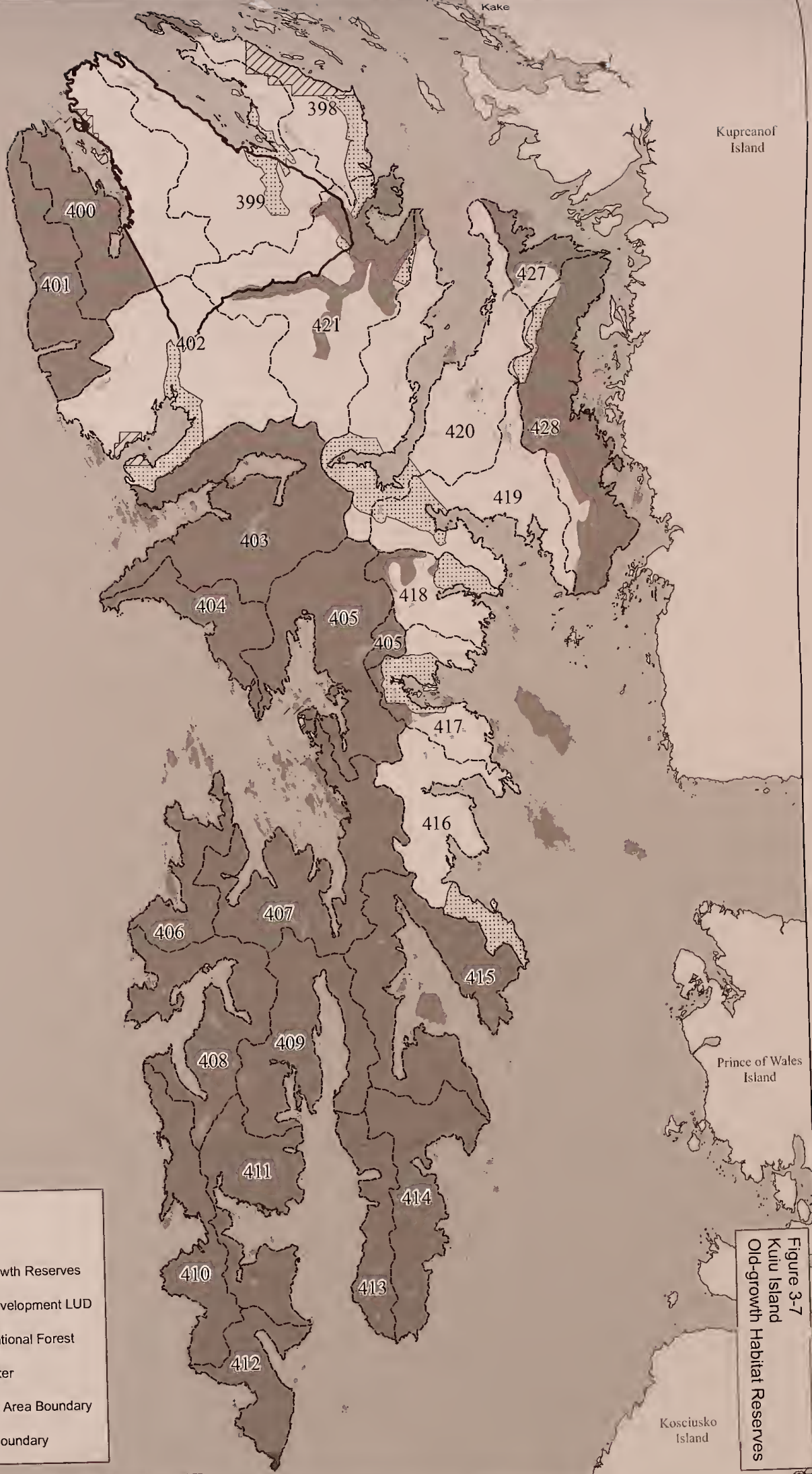
		Option 1 <sup>a</sup>	Option 2
<b>General Criteria</b>			
Total acres - should be at least 4,088 acres <sup>b</sup>		2,628	4,158
Acres of POG – should be at least 2,044 acres <sup>c</sup>		2,386	3,770
Shape		Linear	Circular-Linear
Acres of early seral habitat included		154	99
Miles of NFS road included		2.91	4.75
<b>Site-specific Factors</b>			
Acres of important deer winter range (HSI 0.6 – 1.0)		508	523
Acres of high value marten habitat (HSI 0.9 – 1.0)		1,466	2,501
Total acres of high volume strata		1,462	2,623
Total acres of medium volume strata		422	852
Total acres of low volume strata		52	175
Total acres below 1500 ft. elevation		2,229	3,722
Total acres below 800 ft. elevation		1,893	2,082
Contains the largest blocks of contiguous old-growth within a watershed?		Yes	Yes
Known or suspected goshawk nesting habitat		Yes	Yes
Connectivity to other OGRs		Yes	Yes
Suspected marbled murrelet nesting habitat		Yes	Yes
Rare features	Acres of coarse canopy forest	815	1,454

<sup>a</sup> Includes acres on several small islands off Kuiu Island shore

<sup>b</sup> 16 percent of VCU acres need to be within the small OGR

<sup>c</sup> 50 percent of the 16 percent must be in POG





**Legend**







-  Old-growth Reserves
-  Non-development LUD
-  Non-national Forest
-  Saltwater
-  Project Area Boundary
-  VCU Boundary

Figure 3-7  
Kuai Island  
Old-growth Habitat Reserves
















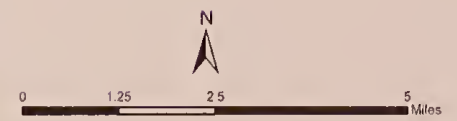


# Kuiu Timber Sale

Figure 3-8  
Small Old-Growth Reserve  
Options in VCUs  
398, 399 and 402

## Legend

-  Forest Plan OGR (Option 1)
-  Interagency OGR (Option 2)
-  Recreational River
-  Lakes/Saltwater
-  Managed Stands
-  Non-National Forest
-  Forest Land Suitable for  
Commercial Timber Production
-  Stream Value Class I & II
-  Project Area Boundary
-  VCU Boundary
-  Existing Open Roads







### 3.7.1.4 Cumulative Effects

The small OGRs in VCUs 419 and 420 were adjusted during the Threemile Timber Sale and were analyzed in the Threemile Timber Sale EIS. Proposed changes in small OGRs in VCUs 416, 417, and 418 will be analyzed when planning is done in those areas or as part of the Forest Plan Amendment. These adjustments to the small OGRs improve connectivity, increase the function of the OGRs, and help meet the intent of the Forest Plan on a landscape scale.

**Table 3-45. Small old-growth habitat reserve options for VCU 402**

		Option 1	Option 2
<b>General Criteria</b>			
Total acres - should be at least 5,197 acres <sup>a</sup>		4,008	5,279
Acres of POG – should be at least 2,599 acres <sup>b</sup>		2,642	3,658
Shape		Linear	Linear
Acres of early seral habitat included		458	361
Miles of NFS road included		4.19	3.44
<b>Site-specific Factors</b>			
Acres of important deer winter range (HSI 0.6 – 1.0)		676	841
Acres of high value marten habitat (HSI 0.9 – 1.0)		2,520	2,575
Total acres of high volume strata		1,787	2,575
Total acres of medium volume strata		495	712
Total acres of low volume strata		360	371
Total acres below 1500 ft. elevation		3,967	5,008
Total acres below 800 ft. elevation		3,480	4,317
Contains the largest blocks of contiguous old-growth within a watershed?		No	Yes
Known or suspected goshawk nesting habitat		Yes	Yes
Connectivity to other OGRs		Yes	Yes
Suspected marbled murrelet nesting habitat		Yes	Yes
Rare features	Acres of coarse canopy forest	749	67

<sup>a</sup> 16 percent of VCU acres need to be within the small OGR.

<sup>b</sup> 50 percent of the 16 percent must be in POG.

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## 3.7.2 Management Indicator Species

Management indicator species (MIS) are those wildlife species whose responses to land management activities can be used to predict the likely response of a wide range of other species with similar habitat requirements. Under the MIS concept, the responses to management activities of relatively few species are studied and monitored in order to predict the impacts to entire assemblages of species and associated habitats. MIS are used to assess maintenance of population viability, biological diversity, and management of game (Forest Plan FEIS).

The following Forest Plan MIS are known to occur on Kuiu Island: Sitka black-tailed deer, Alexander Archipelago wolf, Vancouver Canada goose, American marten, black bear, river otter, red squirrel, bald eagle, red-breasted sapsucker, hairy woodpecker, and brown creeper. Table 3-46 shows the MIS known to occur on Kuiu Island, which species have been selected as MIS for this project, and a rationale for that selection. The selected species are discussed in this section and in the Wildlife Resource Report which can be found in the Kuiu Project planning record.

### **American Marten**

Marten was selected as an MIS because of its association with old-growth and this habitat's value to many other species including goshawk. Marten (*Martes caurina*) are endemic to Kuiu Island.

## 3.7.3 Endemic Marten Species

Recent studies have shown that about half of the Kuiu Island marten population is *Martes americana*, common to nearby islands (Mitkof and Kupreanof Islands) and mainland populations, and the remaining population is *Martes caurina* that is endemic to Kuiu Island (Stone and Cook 2002). The *americana* clade appear to be recent arrivals from nearby islands. Due to the fact that very narrow stretches of saltwater separate the islands of Mitkof, Kupreanof, and Kuiu from each other and the mainland, the immigration of the *americana* clade appears to be a natural occurrence (Cook et al. 2001). The two clades appear to be hybridizing. More information on the occurrence of these unique clades on Kuiu Island is available in Small et al. 2003, Stone and Cook 2002 and in the Wildlife Resource Report available in the planning record.

## 3.7.4 Marten Habitat Capability Model

The Forest Plan marten model (Alarid 1995, Primaky 2002) was developed to evaluate and compare the potential quality of habitat for marten. The model assumes that optimal habitat for marten must have sufficient protective canopy cover, and available prey species. A habitat suitability index (HSI) is assigned to areas based on volume, stand size class (stand age), presence of beach fringe or riparian habitat, and elevation. The model assumes that habitat with an HSI



Table 3-46. Management Indicator Species

Management Indicator Species	Potential habitat in Project Area?	Carried forward for Kuiu Timber Sale analysis?
<b>Sitka Black-tailed Deer</b>	Yes	Yes – Important subsistence and game species, uses low-elevation, old growth. See Issue 2 in this chapter.
<b>Alexander Archipelago Wolf</b>	Yes	Yes – Furbearer and game species, uses old-growth for denning. May be affected by deer populations.
<b>American Marten</b>	Yes	Yes – Furbearer, uses high volume old-growth habitat.
<b>Red Squirrel</b>	Yes	No - There is no concern with red squirrel habitat; leave trees, riparian buffers and the matrix retain sufficient habitat.
<b>River Otter</b>	Yes	No - The majority of river otter habitat is protected by Forest Plan Standards and Guidelines.
<b>Black Bear</b>	Yes	Yes – Important game species. Bear hunting is discussed in the Recreation section of this chapter.
<b>Bald Eagle</b>	Yes	No - The majority of bald eagle nesting and foraging habitat is protected by Forest Plan Standards and Guidelines. The majority of bald eagle nesting, roosting and foraging habitat is protected by Forest Plan Standards and Guidelines. An existing nest is located next to the Rowan Bay LFT.
<b>Hairy Woodpecker, Brown Creeper, Red-breasted Sapsucker</b>	Yes	No - Habitat considerations are included in the biodiversity and coarse canopy (i.e. old-growth) analysis.
<b>Vancouver Canada Goose</b>	Yes	No - Forest Plan Standards and Guidelines protect primary habitat.

value of 1.0 is capable of supporting a marten population density of 2.7 marten per square mile. Figure 3-9 displays the high value marten habitat capability values in the Project Area.

High value marten habitat is defined as high volume strata, old-growth stands below 1,500 feet in elevation (Forest Plan FEIS pp. 3-354 and 3-360). The habitat model assigns these areas a suitability index (HSI) of 0.9 and above. This habitat also represents important Queen Charlotte goshawk nesting and foraging habitat (TPIT 1998). Coastal beach fringe and riparian areas have very high values. Cavities in large

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boles of trees and snags, hard downed logs, and beneath tree roots are most important for natal dens (Soutiere 1979, Spencer 1987 and Campbell 1979). Marten were analyzed at the WAA level using the most current version of the marten model. WAA 5012 currently contains 51,614 acres of high value marten habitat.

## 3.7.5 Existing Conditions

Approximately 21,886 acres have been harvested within WAA 5012 since 1954, much of it clearcut. Table 3-47 compares the acres of high value marten habitat of the historic (1954), and current (2006) conditions to the proposed alternatives within WAA 5012. The table shows that high value marten habitat acres has been reduced approximately 29 percent from the historic condition and the reduction in the acres of current high value marten habitat would range from less than one percent in Alternative 2 to approximately two percent in Alternatives 4 and 5.

Effects to high value marten habitat in Alternatives 2 and 3, and to a lesser amount Alternative 4, were most likely overestimated as the model analyzes all units as if they would be clearcut.

Table 3-47 High value marten habitat (HSI > 0.89) in WAA 5012 remaining after harvest by alternative

Historic condition- 72,847 acres	Alternative				
	1 Current condition	2	3	4	5
Acres remaining after harvest	51,614	51,211	50,984	50,438	50,676
Percent reduction from current condition	0%	<1%	1%	2%	2%
Percent reduction from historic condition	29%	30%	30%	31%	30%





# Kuiu Timber Sale

Figure 3-9

High Value Marten Winter Habitat

## Legend

- High Value Marten Winter Habitat HSI .9-1
- Managed Stands
- Non-National Forest
- Lakes/Saltwater
- Unit Pool
- 500 ft Contour Interval
- Project Area Boundary
- Existing Open Roads
- Stream Value Class I & II
- WAA 5012 Boundary







### 3.7.6 Roads

Road density is not a component of the Habitat Capability Model. However, studies have shown that road density may affect the quality of habitat for marten through trapping (Suring et al. 1992).

ADF&G has expressed concern that the total road density is relatively high on north Kuiu and that additional roads on Kuiu may increase the potential hunter and trapper access and make a greater segment of the island's marten populations vulnerable to human caused mortality. In addition, ADF&G has expressed concern that low trapping success may indicate low population density. They are concerned that increasing fur prices may increase trapping effort and when combined with the current road density it could potentially lead to over trapping. However, ADF&G acknowledges that most of the historic and current trapping effort for marten on Kuiu occurs from the shoreline.

Very few trappers use the road system to trap on Kuiu Island annually. No permanent communities are on the island, and ferry service to the island does not exist. The only areas available for trapping during the winter are along Keku Strait (east side of Kuiu) shoreline and along the road system from the Threemile LTF. All other access points are extremely difficult to get to during the winter months due to severe weather along Frederick Sound and Chatham and Sumner Straits. Table 3-16 in Section 3.3 documents increased trapping mortality for marten on Kuiu Island during years when temporary residents had motorized access to the area.

There is little evidence of OHV use on most of the closed roads, mainly due to the remoteness of Kuiu Island and the impassibility on the roads once the stream crossings have been removed. Most personal vehicle use on the island is in the form of pickup trucks, which cannot navigate the alder or the mound and pit-type barriers normally found on closed roads. Game trails along the closed roads are common.

Currently, the open road density in WAA 5012 is 0.46 mi/mi<sup>2</sup>. Total road density in the WAA is 0.68 mi/mi<sup>2</sup>. Most of the former temporary roads in the Project Area and WAA were closed by decommissioning after their use was terminated. Closed roads generally have structures (bridges and culverts) removed, intact water bars, and are grown in with alder. Table 3-48 shows the open road densities by alternative within WAA 5012 after implementation. All temporary roads would be decommissioned and all NFS roads, new or reopened for the project, would be placed into storage, effectively closing these roads to all motorized vehicles after the completion of harvest activities. In fact, all action alternatives would decrease the open road density within the Project Area by placing some currently open roads into



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storage (see the Transportation section of this chapter for current and proposed road densities by alternative).

**Table 3-48. Open road density in WAA 5012**

Alternative	Alt 1 (No-Action)	Alt 2	Alt 3	Alt 4 (Proposed Action)	Alt 5
<b>Proposed Open Road Density (mi/mi<sup>2</sup>) after Harvest</b>	0.46	0.42	0.42	0.41	0.41

At this time, ADF&G acknowledges it does not have a good understanding of the current or historic marten populations, nor has it limited the number of marten that may be trapped on Kuiu island (pers. comm. Lowell 2006). The Forest Plan directs that where marten data (harvest or population data) suggest that mortality exceeds sustainable levels, the Forest Service will work with the ADF&G to identify the probable sources of mortality, examining the relationship between hunter/trapper harvest and human access. It further states that where road access has been determined through the analysis to significantly contribute to unsustainable marten mortality, effective road closures would be implemented to reduce mortality (Forest Plan p. 4-118). Neither the USFWS nor the ADF&G has indicated that marten population or harvest data suggest that mortality on Kuiu Island exceeds sustainable levels.

## ***Alexander Archipelago Wolf***

The Alexander Archipelago wolf was selected as an MIS because the wolf is both hunted and trapped in Southeast Alaska. It is one of the major predators in Southeast Alaska on deer and moose and helps maintain healthy prey populations.

The Alexander Archipelago wolf occurs on the Southeast Alaska mainland and on all large islands in Southeast Alaska except for Admiralty, Baranof, and Chichagof (Person et al. 1996). A wide-ranging, opportunistic predator, the wolf does not exhibit a preference for specific habitats or habitat characteristics. Wolf presence is more indicative of the availability of habitat for its primary prey species, Sitka black-tailed deer, rather than landform, climate, or vegetation (Suring et al. 1994, Person et al. 1996). The wolf secondarily preys upon beaver and moose, and, when available, spawning salmon and waterfowl (Person et al. 1996). Wolves on Kuiu Island consume deer,

moose, black bear, mink, muskrats, marten, other rodents, waterfowl, fish and grouse.

The Forest Plan initial direction was to maintain 13 deer/mi<sup>2</sup> to support wolves (Forest Plan p. 4-116). However, as a result of monitoring and additional research, this has been changed to 18 deer/mi<sup>2</sup> over broad areas using the current deer habitat capability model (Monitoring and Evaluation Report 2000, Person et al. 1996). Since wolves tend to have home ranges that cross several WAAs, the appropriate scale at which this model should be applied is the biogeographic province (USDA 1998 p. 16). However, the State of Alaska showed concern over the ability of north Kuiu Island (WAA 5012) to support deer at a carrying capacity high enough to support wolves. Therefore, the carrying capacity was analyzed by both the biogeographic province (entire Kuiu Island) and by WAA 5012. Table 3-49 displays deer densities.

**Table 3-49. Habitat Capability Changes for Sitka Black-tailed Deer**

	1954	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Deer density (mi/mi<sup>2</sup>) to support wolf and hunter demand for WAA 5012</b>	37	29	29	29	29	29
<b>Deer density (mi/mi<sup>2</sup>) to support wolf and hunter demand for Kuiu biogeographic province</b>	37	34	34	34	34	34

Deer density numbers used in Table 3-49 were generated by the deer model. They are theoretical numbers which estimate the deer density that the habitat can support and should be used with caution.

The IDT evaluated the impacts to wolves on an island-wide basis (Kuiu Island Biogeographic Province). According to the deer winter habitat capability model, Kuiu Island theoretically has enough habitat to currently support 34 deer/mi<sup>2</sup> and WAA 5012 currently has enough habitat to support 29 deer/mi<sup>2</sup>. With the implementation of any action alternative, the capability of the island and WAA to support deer would not change measurably. Person et al. (1996) believes this is a sufficient prey density to support a sustainable wolf population and meet human deer harvest demands.

#### **ADF&G Harvest Data**

Ninety-four wolf pelts taken from WAA 5012 were turned in to the Alaska Department of Fish and Game for sealing between 1990 and 2001 (Meucci 2005). The annual average harvest over the last twenty

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years is five wolves. Refer to the Subsistence section of this chapter for a description of WAA 5012.

## Dens

Availability of suitable denning habitat is of secondary importance to wolves. Dens are generally located in sites with good drainage and within 100 meters of fresh water (Person et al. 1996).

During the 2003 field season, field crews located a probable wolf den in the Project Area. The crew took photos and the crew leader conferred with Dave Person from ADF&G. The prescribed 1,200-foot buffer following Forest Plan direction (Forest Plan p. 4-113) has been added to this site. The site was revisited during the 2004 and 2005 field seasons and found to be inactive.

## Roads

The primary threat to wolf populations is high road densities and increased access by humans who kill wolves legally and illegally by shooting, snaring, or trapping (Person et al. 1996, Person 2001). Person et al. (1996) found wolves on Prince of Wales Island (POW) to be intolerant of open road densities that exceed 0.7-1.0 mi/mi<sup>2</sup>, raising a concern of maintaining viable populations. Person (2001) also found that while wolves are susceptible to hunting and trapping from all roads, there was an increase in wolf mortality from roads that were connected to communities. In the POW study area, the roads were attached to population centers; the island is serviced by the Alaska Marine Highway ferry system. Also, the methods used to close roads at the time of the study were not stopping motorized vehicle traffic.

Currently the open road density for Kuiu Island (Kuiu Biogeographic Province) is 0.2 mi/mi<sup>2</sup>. The open road density in WAA 5012 is 0.42 mi/mi<sup>2</sup>. Total road density for WAA 5012 is 0.46 mi/mi<sup>2</sup>. However, Kuiu Island is not connected to human population centers and is not serviced by the Alaska State Ferry system. Closed roads on Kuiu have bridges and culverts removed and are generally grown over with alder which prevents motor vehicle traffic. As stated earlier, the average annual wolf harvest since 1984 has been 5 animals. The harvest of wolves is not expected to change due to the difficulty of accessing the island. This project would not increase open road density. In fact, all action alternatives for this project propose to reduce open road density. Refer to the Transportation section of this chapter and the Road Management Objectives in Appendix B for more information.

The Forest Plan directs that when wolf population data suggest mortality exceeds sustainable levels, the Forest Service will work with the ADF&G and the USFWS to identify probable sources of mortality by examining the relationship between wolf mortality, human access,



and hunter/trapper harvest. It further states that when analysis determines that road access significantly contributes to unsustainable wolf mortality, effective road closures will be implemented (Forest Plan p. 4-116). Neither the USFWS or the ADF&G has indicated that wolf population or harvest data suggest mortality exceeds sustainable levels on Kuiu Island.

### ***Bald Eagle***

The bald eagle population is widely distributed throughout Southeast Alaska during the breeding season. Bald eagles that breed along the coast tend to remain close to their breeding territory throughout the year if food is available. When not involved in nesting activities, however, these birds may temporarily move to areas with abundant food sources. Habitats commonly used include beach fringe, some estuarine fringe and streamside riparian areas. Bald eagles may also concentrate at feeding grounds in the spring. Throughout their range, bald eagles are opportunistic in their use of available food resources. The beach/estuary fringe and riparian buffers described in the Forest Plan provide sufficient habitat for these animals. Forest Plan Standards and Guidelines and the Bald Eagle Protection Act provide protection for nesting and roosting habitat.

### **Existing Condition**

A known bald eagle nest tree is directly adjacent to the Rowan Bay LTF. The eagle moved into the current nest tree while the Alaska Pulp Company's long-term contract was in effect and built the nest next to the refueling station for both equipment and helicopter operations. The eagle did not seem disturbed by the activity including helicopter landings at the refueling site and continued to successfully raise its young for many years. Since the late 1990s the LTF has not been used and the nest has not been monitored so the nest activity is not currently known. After consultation with U.S. Fish and Wildlife Service (per com Jacobson 2006), it is recommended that the nest be monitored in the spring and that no heavy equipment be allowed within 330 feet of the existing nest tree from March 1 to May 31. By May 31, if no eagle nesting activity has occurred normal operations would be allowed to continue. If the nest is active, heavy equipment would be excluded around the nest site, including helicopter activity within ¼ mile of the nest tree, and the nest would be monitored for the effectiveness of these guidelines.

Planned activities are not expected to adversely affect bald eagle prey species or nesting habitat. As a result, this species will not be carried forward in this analysis.

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## 3.7.7 Effects Common to All Alternatives

### 3.7.7.1 Alexander Archipelago Wolf

The island-wide deer density would remain above 34 deer/mi<sup>2</sup> after harvest in all alternatives. The resulting deer density is sufficient to support a viable wolf population and meet hunters' demands.

Historically, few wolves have been harvested annually on Kuiu Island. Small wolf harvests are likely to continue on Kuiu Island due to the limited access during the trapping season. Only the eastern portion of the island is vulnerable to trapping from the beach. Hunting pressure is limited because the road system is not connected to the Alaska Marine Highway, and, while not impossible, it is difficult to transfer a vehicle to the road system. Therefore, an increase in trapping pressure is not anticipated on Kuiu Island due to limited access and the absence of permanent logging camps or communities.

Alternative 1 would have no impact to road density. For all action alternatives, open road density both island-wide and for WAA 5012 would temporarily increase during the life of the timber sale; however, there would be a decrease in current open road density with the completion of timber harvest activities. Island-wide open road density would decrease to 0.18 with implementation of any action alternative and the WAA road density would decrease to 0.42 or 0.41 depending on the selected action alternative. From discussions with Alaska Department of Fish and Game, there is agreement that road impacts are not expected to substantially reduce wolf populations within WAA 5012, or affect overall wolf distribution (Lowell 2006).

### 3.7.7.2 Road Density

Open road density in WAA 5012 is currently 0.46 mi/mi<sup>2</sup>. All action alternatives would reduce the open and drivable road densities. Island-wide open road densities are 0.20 mi/mi<sup>2</sup> and would be reduced to 0.18 mi/mi<sup>2</sup> with the implementation of any action alternative. Roads which are currently closed to motor vehicles would be reopened and reconditioned to access timber then returned to storage condition. All new reconditioned roads and some miles of currently open NFS roads would be effectively closed to motorized traffic. Temporary roads would be decommissioned (see the Transportation section in this chapter).

## 3.7.8 Comparison of Alternatives for Management Indicator Species

### 3.7.8.1 Alternative 1

This alternative proposes no new activities in the Project Area. Wildlife habitat may decline in current second-growth stands as they develop and the understory forage is shaded. There would be no change in the current road network.

High value marten habitat has been reduced by 29 percent since 1954 in WAA 5012. No additional reductions would be expected with this alternative.

### 3.7.8.2 Alternative 2

Alternative 2 proposes harvest on 478 acres. Harvest prescriptions include 280 acres of partial harvest with 50 percent basal area retention and 197 acres of clearcut.

Marten, deer and wolf would unlikely be adversely affected by this alternative since 281 acres (59 percent of the acres harvested) are in partial harvest prescriptions that retain 50 percent of the basal area, which would help maintain a natural forest mosaic and retain habitat for all the above species. Road closures would reduce hunter accessibility. The Forest Plan deer and marten models report all units as harvested by an even-aged prescription, so the model would overestimate the number of acres of high value habitat removed using partial harvest.

The current high value marten winter habitat would be reduced by less than one percent. This reduction is most likely overestimated because the habitat capability model does not account for partial harvest.

Partial harvest is planned in Units 109b, 111, 207, 209, 404, 405, 415 and 418 and equals 59 percent (281 acres) of the acres harvested by this alternative. Within these partial harvest units, 60 acres are low elevation, high volume habitat. The use of partial harvest would help maintain marten habitat suitability with the retention of some old-growth characteristics, such as cover, large standing and down trees for denning and resting sites, and travel corridors. With 50 percent of the basal area retained, the coarse structure within the stand would be maintained until the harvested portion could recover and begin to contribute to the stand structure and cover.

Alternative 2 would harvest 197 acres using even-aged management (clearcutting). Within these acres, portions of the following units would occur within low elevation, high volume habitat: 103c, 103d, 208a, 208b, 416 and 417 (totaling 41 acres). Marten have been shown to avoid clearcut harvest areas for up to 40 years after harvest (Thompson 1988).

### 3.7.8.3 Alternative 3

Alternative 3 proposes harvest on 786 acres. Harvest prescriptions include 377 acres of partial harvest with 50 percent basal area retention and 409 acres of clearcut harvest.

Marten, deer and wolf would unlikely be adversely affected by this alternative since 377 acres (48 percent of the acres harvested) are in partial harvest prescriptions that retain 50 percent of the basal area, which would help maintain a natural forest mosaic and retain habitat for all the above species. Road closures would reduce hunter accessibility.



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Alternative 3 would reduce the current high value marten winter habitat by approximately one percent, and this reduction is most likely overestimated because the habitat capability model does not account for partial harvest.

Partial harvest is planned in Units 109, 112, 204, 207, 209, 404, 405 and 417 and is 58 percent (377 acres) of the acres harvested by this alternative. Within these partial harvest units, 57 acres are low elevation, high volume habitat. The use of partial harvest would help maintain marten habitat suitability with the retention of some old-growth characteristics, such as cover, and large standing and down trees that can be used for denning and resting sites, as well as help maintain travel corridors for marten. With 50 percent of the basal area retained, the coarse structure within the stand would be maintained until the harvested portion could recover and begin to contribute to the stand structure and cover.

Alternative 3 would harvest 409 acres using even-aged management (clearcutting). Within these acres, portions of the following units would occur within low elevation, high volume habitat: 109, 208 210, 308, 403, and 416 (totaling 25 acres). The coarse stand structure would be removed and could take 100-150 years to return to the stands.

## 3.7.8.4 Alternative 4

Alternative 4 proposes harvest on 1,387 acres. Harvest prescriptions include 361 acres of partial harvest with 50 percent basal area retention and 1,026 acres of clearcut.

Of the action alternatives, this alternative would have the greatest affect to wildlife since it harvests the most forest and removes the greatest amount of habitat.

Alternative 4 would reduce the current high value marten winter habitat by two percent, but this reduction is likely overestimated because the habitat capability model does not account for partial harvest.

Partial harvest is planned in Units 207, 209, 303, 305a, 305b, 414, and 415 and equals 26 percent (363 acres) of the acres harvested by this alternative. Within these partial harvest units, 112 acres are low elevation, high volume habitat. The use of partial harvest would help maintain marten suitability with the retention of some old-growth characteristics, such as cover, and large standing and down trees that can be used for denning and resting sites. Partial harvest would also help maintain travel corridors for marten. By retaining 50 percent of the basal area, the coarse structure within the stand would be maintained until the harvested portion recovers and begins to contribute to the stand structure and cover.

Alternative 4 would harvest 1,025 acres using even-aged management (clearcutting). Within these acres portions of the following units would occur within low elevation, high volume habitat: 109, 208 210, 308, 403, and 416 (totaling 147 acres). Marten have been shown to avoid clearcut harvest areas for up to 40 acres after harvest (Thompson 1988).

### **3.7.8.5 Alternative 5**

Alternative 5 proposes harvest of 1,208 acres, all of which would be clearcut harvested.

Alternative 5 would reduce the current high value marten winter habitat by two percent.

Alternative 5 would harvest 1,208 acres using even-aged management (clearcutting). Within these acres, portions of the following units would occur within low elevation, high volume habitat: 111, 112, 208a, 208b, 209, 210, 308, 401, 403, 404, 412, 416, 417, 418, and 503 (totaling 156 acres). Marten have been shown to avoid clearcut harvest areas for up to 40 years after harvest (Thompson 1988).

## **3.7.9 Cumulative Effects for Management Indicator Species**

### **3.7.9.1 Past, Present, and Reasonably Foreseeable Future**

Timber harvest has occurred on much of the northern portion of Kuiu Island. This harvest was mostly to fill the needs of the long-term sale program starting in 1968. Kuiu Island was an alternate area for the Alaska Pulp Corporation long-term sale. The Kuiu Catalog of Events is located in the planning record and was referenced to determine cumulative effects. All timber harvest in WAA 5012 from the four acres harvested in 1931 to the planned, but unharvested units from Crane and Rowan Mountain Timber Sales and Threemile Timber Sale EISs have been accounted for in this analysis. All non-harvest activities were reviewed for possible impacts to wildlife species as well.

Most of the previously harvested units have been treated once with silvicultural thinning. Wildlife would benefit from the thinning, girdling and/or pruning treatment to approximately 1,475 acres of 39-year-old second-growth stands within the Saginaw watershed. The IDT has visited these units and has determined that it would be beneficial to prescribe treatments to extend the usefulness of the wildlife habitat. The judicious use of silvicultural treatments can extend productive time that harvested units provide suitable habitat.

### ***Planned Projects***

For the Kuiu Timber Sale action alternatives, an individual timber sale or more than one sale over a period of several years, may occur.

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It is reasonable to assume that timber harvest and associated road management will continue on Kuiu Island. The current Tongass timber sale schedule lists other timber sale projects:

- Crane and Rowan Mountain Timber Sales ROD was signed June 1998 and is considered in cumulative effects. Approximately 482 and 745 acres were considered as reasonable future foreseeable harvest in the Project Area and WAA 5012, respectively (refer to the Changes Between DEIS and EIS section in Chapter 2).
- Threemile Timber Sale ROD was signed in April of 2004. The Threemile Timber Sale will harvest approximately 19.5 mmbf on approximately 665 acres and construct 4.2 miles of new NFS roads and 4.2 miles of temporary roads.

## ***Marten***

High value marten habitat has been reduced by 29 percent in WAA 5012 since 1954. Depending on the alternative selected, an additional reduction of less than one percent to two percent would occur within WAA 5012 with the implementation of the action alternatives. The reasonably foreseeable future harvest of the Crane and Rowan Mountain Timber Sales units would further reduce the high value marten habitat by 1 percent. This would bring the cumulative reduction of high value habitat to between 30 and 32 percent.

The Forest Plan FEIS (pp. 3-398 to 3-399) predicts there is a relatively high likelihood of sustaining viable marten populations when an average of 57 percent of the POG is retained within the matrix of development LUDs. Other factors contributing to sustaining viable marten populations include riparian management, the OGR system, and use of partial harvest management in high value marten habitat. Currently, 75 percent of the matrix POG has been retained in the WAA. Adoption of the design changes to the small OGRs within VCUs 398, 399, and 402 would improve marten habitat within these reserve systems.

ADF&G is concerned about the apparent low numbers of marten on Kuiu (Flynn et al. 2004) but admits that it is not possible to relate the low population to trapping or loss of habitat on the island, as no historic or current population information is available (pers. com. Lowell 2006). Their concern is that the cumulative reduction in habitat would further restrict and reduce population levels. Analysis of high value marten habitat shows that WAA 5012 would retain approximately 50,000 acres of high value marten habitat after implementation of any of the action alternatives and the reasonably foreseeable future harvest of the remaining units from the Crane and Rowan Mountain Timber Sales EIS. From this analysis, habitat would



remain plentiful within WAA 5012 to sustain viable marten populations.

### ***Wolf***

The cumulative effects analysis includes activities (past, current and reasonably foreseeable future) within the Kuiu Biogeographic Province that may affect wolves. Deer are a primary prey item; therefore, a reduction in deer populations may effect wolf populations. Historic important deer winter range has been reduced by 15 percent at the island-wide level and the action alternatives would further reduce important deer winter range by less than one percent. The harvest of the Crane and Rowan Mountain Timber Sales EIS and Threemile Timber Sale EIS units would further reduce important deer winter range by less than one percent for all action alternatives. This small reduction in important deer winter range would have no measurable effect to wolf populations. In addition, the Forest Plan predicts that Kuiu Island would maintain at least 18 deer per square mile at the end of the rotation in 2059 (page 3-379 TLMP FEIS Part 1). This is a sufficient prey density to support a sustainable wolf population and meet human deer harvest demands (Person et al. 1997).

The Kuiu Biogeographic Province has an open road density of 0.2 mi/mi<sup>2</sup>. Implementation of any action alternative along with the implementation of the Crane and Rowan Mountain Timber Sales EIS or Threemile Timber Sale EIS would reduce island-wide road densities to 0.18 mi/mi<sup>2</sup>.

Historically, there have been a small number of wolves harvested annually on Kuiu Island. An increase in trapping pressure on Kuiu Island is not anticipated since there are no permanent logging camps or communities present on the island.

#### **3.7.9.2 Coarse Canopy**

Coarse canopy is best portrayed by volume class 6 and 7 and described as high volume – coarse texture. The terms “large diameter tree forests” and “coarse canopy” are used to describe these stands.

Table 3-50 displays the existing amount of coarse canopy in the Project Area (Alternative 1), and the amount of coarse canopy proposed for harvest by alternative. Within the Project Area coarse canopy is fairly evenly scattered.

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**Table 3-50. Acres of coarse canopy (Volume Class 6 and 7) harvested by alternative and proportions of coarse canopy within the Project Area**

Project Area coarse canopy	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Current acres of POG 30,586 current acres coarse canopy 13,009					
Acres of coarse canopy proposed for clearcut harvest	0	95	172	510	541
Acres of coarse canopy proposed for partial harvest	0	123	155	274	0
Acres of coarse canopy remaining after harvest	13,009	12,791	12,682	12,225	12,468
Percent of current coarse canopy remaining after harvest	100%	98%	97%	94%	96%
Proportion of POG that is coarse canopy after harvest	43%	42%	43%	42%	42%

These stands have low to moderate densities of tall, large diameter trees that are evenly distributed. These stands are considered to be important to some old-growth associated species and may have areas containing the highest biological diversity (Caouette et al. 2000).

Within WAA 5012 and the Project Area the current amount of coarse canopy forest is much higher than the Tongass average (4 percent). The amount of historic coarse canopy that occurred prior to any harvest is unavailable and it is not possible to accurately analyze the cumulative amount of coarse canopy that has been harvested. However, by looking at the locations of the current high volume (class 6 and 7) stands and the managed stands in Figure 3-4 it is possible to theorize that much of the past harvest was in coarse canopy stands.

Table 3-50 shows that the proportion of coarse canopy to POG within the Project Area would remain consistent with all alternatives.

**Alternative 1** would not remove any coarse canopy forest nor change the proportion of coarse canopy to POG within the Project Area.

**Alternative 2** would harvest the fewest acres of coarse canopy among the action alternatives (218 acres). Approximately 99 percent of the current amount of coarse canopy would remain in WAA 5012 if this alternative were implemented.

Approximately 123 acres (56 percent) of the proposed harvest units within coarse canopy forests would be partial harvest to help retain some habitat structure, including a large tree component within the stands. Units proposed for partial harvest that include coarse canopy are: 207, 209, 405, and 415.

This alternative would also harvest 95 acres of coarse canopy forest using even-aged management (clearcutting). The coarse stand structure would be removed and could take in excess of 100-150 years to reestablish. Units with coarse canopy that are proposed for clearcut include: 103c, 103d, 207, 208a, 208b, 416, and 417.

**Alternative 3** would harvest 327 acres of coarse canopy forest, of which 155 acres are partial harvest. Approximately 99 percent of the current amount of coarse canopy would remain in WAA 5012 if this alternative were implemented.

The partial harvest would help retain some habitat structure, including a large tree component, forage, and canopy cover within the stands. Units proposed for partial harvest that contain portions of coarse canopy are: 109, 112, 204, 207, 209, 404, 405, 409, and 417.

This alternative would also harvest 172 acres of coarse canopy forest using even-aged management (clearcutting). The coarse stand structure would be removed and could take in excess of 100-150 years to return to the harvested stands. Units with portions of coarse canopy that are proposed for clearcutting are: 109, 207, 208, 210, 308, 403, 410, and 416.

**Alternative 4** would harvest the most acres of coarse canopy of the action alternatives (784 acres). Approximately 96 percent of the current amount of coarse canopy would remain in WAA 5012 if this alternative were implemented.

Approximately 274 acres of coarse canopy forest are proposed for partial harvest. This would help retain some habitat structure, including a large tree component within the stands. Units proposed for partial harvest that contain portions of coarse canopy are: 207, 209, 302, 303, 305a, 305b, 414, and 415.

This alternative would also harvest 510 acres of coarse canopy forest using even-aged management (clearcutting). The coarse stand structure would be removed and could take in excess of 100-150 years to return to the stands. Units with portions of coarse canopy that are proposed



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for clearcutting are: 101, 109, 111, 112, 207, 208, 210, 211, 212, 308, 401, 402, 403, 404, 405, 409, 410, 412, 416, 418, 503, and 504.

**Alternative 5** would clearcut harvest the most coarse canopy habitat (541 acres). Approximately 98 percent of the current amount of coarse canopy would remain in WAA 5012 if this alternative were implemented. The coarse stand structure would be removed and may take in excess of 100-150 years to return to the harvested stands.

Units with portions of coarse canopy that are proposed for clearcutting include: 101, 109, 111, 112, 204, 207, 208a, 208b, 209, 210, 211, 212, 308, 401, 402, 403, 404, 405, 409, 410, 412, 416, 417, 418, 503, and 504.

#### ***Cumulative Effects***

The cumulative effects analysis area for coarse canopy is WAA 5012. The WAA was selected as the analysis landscape scale since it is the same scale used for analysis of most Management Indicator Species.

Currently 22,956 acres or 18 percent of WAA 5012 is coarse canopy forest. The proportion of POG that is coarse canopy is approximately 43 percent.

In **Alternative 1**, no harvest or road building would occur within the Project Area at this time. However, this area is within a Timber Production LUD and it should be assumed that it will be harvested in the future.

Currently 22,956 acres or 16 percent of WAA 5012 is coarse canopy forest. The proportion of POG that is coarse canopy is approximately 25 percent. Old growth stands with coarse canopy would continue to support wildlife at their current capability at least until the next planning cycle.

Of the action alternatives, **Alternative 2** would harvest the fewest acres of coarse canopy (218 acres) with approximately 99 percent of the existing coarse canopy in WAA 5012 remaining. Approximately 56 percent of the coarse canopy acres proposed for harvest would be partial harvest. These units include 207, 209, 405, and 415. Units with coarse canopy proposed for clearcut are 103c, 103d, 207, 208a, 208b, 416, and 417.

Of the action alternatives, **Alternative 3** would harvest the second fewest acres of coarse canopy (327 acres) with approximately 99 percent of the existing coarse canopy remaining in WAA 5012.

Approximately 47 percent of the acres in this alternative with coarse canopy are partial harvest, which would retain habitat structure including a large tree component within the stands. Units proposed for

partial harvest that contain portions of coarse canopy are 109, 112, 204, 207, 209, 404, 405, 409, and 417. Units with portions of coarse canopy that are proposed for clearcutting are 109, 207, 208, 210, 308, 403, 410, and 416.

Of the action alternatives, **Alternative 4** would harvest the most acres (948) and highest proportion of coarse canopy. Approximately 97 percent of the existing coarse canopy would remain in WAA 5012 if this alternative were implemented.

Approximately 35 percent of coarse canopy acres harvested in this alternative would be partial harvest. Units with this prescription include 207, 209, 302, 303, 305a, 305b, 414, and 415. Units with portions of coarse canopy proposed for clearcutting are 101, 109, 111, 112, 207, 208, 210, 211, 212, 308, 401, 402, 403, 404, 405, 409, 410, 412, 416, 418, 503, and 504.

Of the action alternatives, **Alternative 5** would harvest the second greatest number of acres (514) of coarse canopy with the highest number of acres clearcut. Approximately 98 percent of the current amount of coarse canopy would remain in WAA 5012 if this alternative were implemented.

All units are proposed for clearcutting, and units with portions of coarse canopy include: 101, 109, 111, 112, 204, 207, 208a, 208b, 209, 210, 211, 212, 308, 401, 402, 403, 404, 405, 409, 410, 412, 416, 417, 418, 503, and 504.

### 3.7.10 Migratory Birds

The Migratory Bird Treaty Act is the domestic law that affirms, or implements, the United States' commitment to four bilateral international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protects selected species of birds that are common to each country (i.e., they occur in both countries at some point during their annual life cycle). The list of migratory bird species protected under these treaties is filed in the planning record (U.S. Fish and Wildlife Service 2004).

#### ***Existing condition***

Executive Order 13186 of January 10, 2001, directs federal agencies to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. A report entitled "Neo-tropical Birds of Concern on the Tongass National Forest – Kuiu Timber Sale Area" is filed in the planning record. The report includes a discussion of 40 protected migratory bird species that may occur on the Tongass National Forest, and any anticipated effects to these species from the proposed activities for this project. The report concludes that proposed activities for this project are not expected to result in measurable

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negative effects to any migratory bird populations for the following reasons:

- Eighteen of the migratory bird species considered important on the Tongass National Forest do not occur in habitats where forest management activities would likely take place. These habitats are either not impacted by management activities such as logging and road building, or are protected by Forest Plan LUDs.
- Two migratory bird species are extremely rare on the Tongass National Forest but their habitat may be impacted by management activities. These species are associated with riparian shrub and alder thickets. No timber harvest in this habitat type is proposed for this project.
- Eight migratory bird species are uncommon on the Tongass National Forest but could be disturbed by management activities on the Tongass National Forest. Forest Plan Standards and Guidelines and LUD allocations should protect sufficient habitat for these species.
- Twelve species are common or abundant within habitats where forest management activities may take place. Potential disturbances may occur to their habitat, but Forest Plan Standards and Guidelines and LUD allocations should protect sufficient habitat for these species.

#### ***Direct, Indirect and Cumulative Effects***

Some direct effects to nesting birds would occur in all of the action alternatives. The primary effect would be loss of habitat, nest destruction, or abandonment. The magnitude of the effects would vary depending upon the alternatives selected and in which season harvest would occur. Nesting in Southeast Alaska generally begins in May. By September, the birds are fledged and would not be directly affected.

Indirect effects would be associated with fragmentation and patch size reduction of suitable habitat. For species such as the northern goshawk, marbled murrelet, and Townsend's warbler, habitat removal would affect forest fragmentation by potentially reducing the effectiveness of interior habitat and increasing the potential for nest-site predation from avian predators that are associated with forest edges and fragmented landscapes.

The retention of approximately fifty percent of the existing overstory in many of the action alternatives would help mitigate many of these effects by providing reserve trees and increasing habitat values to these birds when compared to even-aged silvicultural prescriptions. The OGR system was designed to maintain large areas of habitat for these



species. That, in combination with the management of the matrix within the lands open to harvest, would mitigate many of the effects of harvest on neotropical migratory birds. Other species may be more associated with forest edge, riparian or more open habitats; therefore, the effects from timber harvest could be beneficial to other bird species. Individual birds may be affected, but the design of the alternatives, in conjunction with the management of the matrix and the OGRs, will meet the requirements of habitat for these bird species and maintain them within the Tongass National Forest.

## 3.8 Timber and Vegetation Resources

### 3.8.1 Introduction

The Project Area is a mosaic of coniferous forests interspersed with muskeg, scrubland, and alpine plant communities. The forests are primarily western hemlock with a Sitka spruce component and scattered Alaska yellow-cedar. Higher percentages of Sitka spruce are found along streams and other well-drained sites. The understory shrubs are blueberry, huckleberry, and rusty menziesia. Many species of vascular plants, lichens, and mosses occur throughout all habitat types. Forested muskeg with a high percentage of yellow-cedar occurs throughout the Project Area especially in the lower elevations. Alder is found on disturbed sites such as roadsides, managed stands and along stream banks. Muskegs support shore (lodgepole) pine.

#### 3.8.1.1 Analysis Area

This section covers the timber and vegetation resource for the Project Area (VCUs 399, 400, 402, 421) and the lands immediately adjacent to these VCUs. It tiers to information found in the Tongass Land Management Plan Revision for the timber resource. TLMP states that for the purposes of determining limitations on the scheduling, locating, and calculating the size of additional openings, the adjoining area's vegetation would be adequately stocked with desirable tree species five feet in height. If not, the adjoining area must be considered as an additional part of the proposed opening. Page references include Forest Plan FEIS p. 3-248 through 3-307, Appendix B, Modeling and Analysis Process, and Appendix G, Silvicultural System (USDA Forest Service 1997).

#### 3.8.1.2 Methods

During the 2003 and 2004 field seasons, the Petersburg Ranger District's Integrated Resource Inventory Crew collected data in the Project Area. Information collected contributed to the development of site specific Silvicultural Diagnosis, Logging Systems, and Transportation Analysis by timber stand. This analysis included stream and wildlife surveys and the identification of soils that have a high potential for mass wasting. This information is located in the planning record.

Table 3-51 and Table 3-52 display the species composition by volume for productive forest land in the Project Area and the species composition in the proposed harvest units for each action alternative.

**Table 3-51. Species composition of forest lands in the Kuiu Timber Sale Area**

Species	Percent Volume
Western hemlock	82
Sitka spruce	16
Alaska yellow-cedar	2
Western redcedar	0

**Table 3-52. Timber volume (mbf) and species composition proposed for harvest by alternative**

Species	Alternative				
	Alt 1	Alt 2 <sup>1</sup>	Alt 3	Alt 4	Alt 5
Sitka spruce	N/A	1,988 (21%)	3,189 (20%)	6,738 (20%)	6,009 (19%)
Western hemlock	N/A	7,470 (78%)	12,419 (78%)	26,025 (78%)	24,873 (79%)
Alaska yellow-cedar	N/A	158 (2%)	251 (2%)	537 (2%)	473 (2%)
Western redcedar	N/A	0	0	0	0
<b>Total (mbf)</b>	<b>N/A</b>	<b>9,617</b>	<b>15,859</b>	<b>33,330</b>	<b>31,354</b>

<sup>1</sup>Percentages do not add up to 100% due to rounding.

## 3.8.2 Forest Land Classification

National Forest System (NFS) lands are delineated by vegetative cover, soil type, and administratively designated land use. This classification scheme is intended to show the amount of land that is covered by forest vegetation, with further divisions to show the amount of forest vegetation capable of commercial timber production. Chart 3-3 shows the NFS land classifications in the Project Area.

### 3.8.2.1 Non-Productive Forest Land

Non-productive forest land comprises about 16 percent of the NFS land in the Project Area. Non-productive forest land is forested land that does not support enough timber volume to meet the criteria for productive forest land.



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## 3.8.2.2 Forested Land

These lands comprise about 98 percent of the NFS land in the Project Area. Forested land is land with at least 10 percent tree cover. Land formerly having had such tree cover and is not developed for non-forest use is also forested land.

## 3.8.2.3 Non-Forest Land

Non-forest land comprises about two percent of the NFS land in the Project Area. Non-forested land is land that has never supported forest and lands formerly forested but now developed for nonforest uses.

## 3.8.2.4 Productive Forest Land

These lands comprise about 82 percent of the NFS land in the Project Area. Productive forest lands have timber volumes of greater than or equal to 8,000 board feet/acre or have the potential to achieve and maintain that volume. Productive forest land is capable of producing 20 cu ft/acre/year of industrial wood or has a site index of 40. Productive forest land does not necessarily mean that the stand is within the timber base of lands that are available for commercial timber harvest.

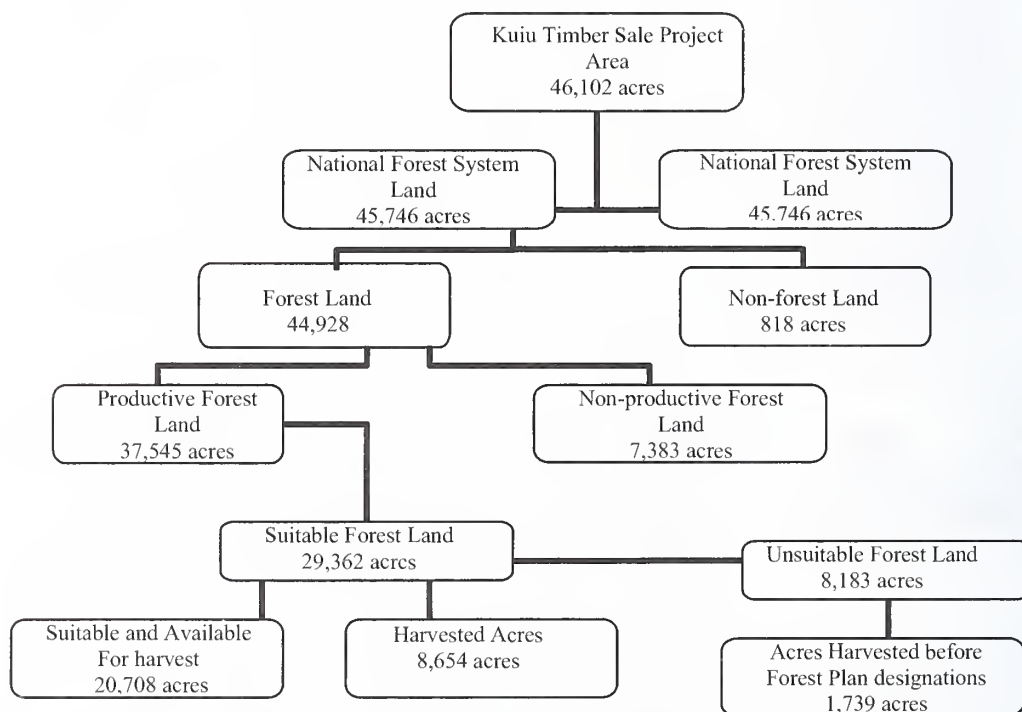


Chart 3-3. Forest land classification in the Kuiu Timber Sale Area

### 3.8.2.5 Unsuitable Forest Lands

About 22 percent of the productive forest land in the Project Area is classified as unsuitable for timber production. Land on slopes greater than 72 percent that have unstable soils and areas within riparian, beach and estuary buffers are examples of unsuitable forest lands.

### 3.8.2.6 Suitable Forest Land

About 78 percent of the productive forest land in the Project Area is classified as suitable for timber production. Within areas of productive forest land some land was removed from the suitable timber base (unsuitable forest lands) due to Forest Plan Standards and Guidelines. What is left is determined suitable for timber production. Appendix A of the Forest Plan describes the process that was used to identify suitable forest land.

## 3.8.3 Volume Classification

### 3.8.3.1 Volume Strata

The Forest Plan's volume strata classification system was used for estimating timber volumes and vegetation structure in the Project Area. The strata system combines the existing timber inventory volume classes with additional information on soils and slope to group the strata. These volume strata are grouped as follows:

**High Volume Strata** are areas within mapped timber inventory volume classes 5, 6, and 7 on non-hydric soils, and on hydric soils with slopes greater than 55 percent. **Medium Volume Strata** are areas within mapped timber inventory volume classes 5, 6, and 7 on hydric soils with slopes less than or equal to 55 percent and areas within mapped timber inventory volume class 4 that are either on non-hydric soils, or are on hydric soils with slopes greater than 55 percent. **Low Volume Strata** are areas within mapped timber inventory volume class 4 on hydric soils with slopes less than or equal to 55 percent.

Estimated timber volumes for the Kuiu Timber Sale Area are based on stand exams performed in 2003 and 2004 (Tables 3-53 and 3-54).

Actual timber volume would be determined from a timber cruise prior to advertisement of the timber sales offered.

**Table 3-53. Volume strata in the Kuiu Timber Sale Area**

Strata	Average Vol/Acre <sup>a</sup>	Productive Forest Acres <sup>b</sup>	Suitable Acres
Low	17 mbf	650	454
Medium	27 mbf	5,211	3,790
High	44 mbf	21,251	16,082

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**Table 3-54. Volume strata acres harvested by alternative**

Strata <sup>a</sup>	Acres in Project Area	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
High	21,251	0	388	620	1,152	929
Medium	5,211	0	64	133	183	224
Low	650	0	18	21	30	30

<sup>a</sup> Does not include non-productive forest acres within Project Area or units

## 3.8.4 Silvicultural Systems

Silvicultural systems are used to manage, harvest, and re-establish stands of forest trees for the purpose of meeting management objectives. Silvicultural systems have been developed to produce more valuable commercial timber at a faster rate, maintain wildlife habitat, and either maintain or enhance scenery values. No single silvicultural system for a forest stand can be used to achieve all of the desired conditions, but a variety of treatments applied over the Project Area would result in a mosaic of stands for different uses. Three silvicultural systems and three harvest methods were considered for the Project Area. Often the proposed treatments are designed to emulate natural disturbance. The Forest Plan (Appendix G) provides detailed information about the silvicultural systems recommended for the Tongass National Forest.

The Kuiu Timber Sale Project Area analysis used a variety of silvicultural systems tailored to site-specific objectives. The objectives include:

- Retain stand legacy or old-growth characteristics to maintain biodiversity,
- Provide for positive economic return and reasonable logging feasibility,
- Provide a reasonable assurance of windfirm riparian buffers where there is significant windthrow risk,
- Protect the soil, watershed, wildlife habitat, and scenery characteristics of the Project Area, and
- Produce wood-fiber for human use.

A complete silvicultural prescription for the entire length of the rotation has been written for each stand selected for harvest. These prescriptions provide guidance for treatments following the proposed timber harvest for this project, including subsequent entries, thinning,



and pruning. The systems considered for the Kuiu Timber Sale are even-aged, two-aged, and uneven-aged systems, and are described below.

## 3.8.4.1 Even-aged Systems

All merchantable trees would be harvested. The objectives of this system are to create a fast-growing stand of trees to maximize wood fiber production, favorable timber sale harvest economics and logging feasibility. These stands would develop into a predominately single-aged stand. Where this treatment is recommended the created openings would not exceed 100 acres. The regeneration system chosen to achieve this treatment is clearcutting (the cutting of all the trees in one harvest entry, producing a fully exposed microsite for the development of a new age class).

The desired future condition is an even-aged stand of the same species composition as the original stand that mimics the results of a large naturally-occurring wind event. Except for reserve trees, all trees greater than nine inches diameter-at-breast-height (DBH) would be harvested in the cable and shovel units. Natural regeneration is expected to be abundant.

## 3.8.4.2 Two-aged System - Clearcut with Reserves

This system is designed to maintain and develop a stand with two age classes. Objectives of this prescription are to: (1) retain trees for scenic values, (2) retain wildlife habitat, and (3) retain structural diversity and a biological legacy.

The desired future condition is a two-aged stand of the same species composition as the original stand. Natural regeneration is expected to be abundant. These stands would not be reentered until the next rotation in approximately 100 years.

Stands proposed for this system would retain a minimum of 50 percent of the pre-treatment basal area. Merchantable trees (trees greater than 9 inches in diameter) would be harvested in patches or as individual trees. Reserves or clumps would be distributed somewhat evenly across the harvest unit or stand.

## 3.8.4.3 Uneven-aged System - Group Selection

This system develops and maintains a stand with trees of three or more distinct age (size) classes, either intimately mixed or in small groups. Objectives of this prescription are to: (1) retain trees for scenic values, (2) retain wildlife habitat, and (3) retain structural diversity and a biological legacy.

The desired future condition is a stand with three or more distinct size classes resulting in an uneven-aged stand. Natural regeneration is expected to be abundant.

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Stands proposed for this system would retain a minimum of 50 percent of the pre-treatment basal area. Merchantable trees (trees greater than 9 inches in diameter) would be harvested in small groups to form a mosaic of irregularly shaped openings within the stand. Smaller trees may be left in this area if the larger trees can be safely removed. Each group harvested would consist of a mixture of tree sizes. Each harvested opening would regenerate, creating a group of trees with a uniform age and height. These openings may be thinned. This would create a stand of three or more distinct size classes in small groups, resulting in an uneven-aged stand.

The next entry into these stands would be in approximately 75 years when 25 percent of the stands' basal area would be removed in groups or as single trees.

### 3.8.4.4 Uneven-aged System - Single Tree Selection

Stands proposed for this system would retain a minimum of 50 percent of the pre-treatment basal area. Objectives of this prescription are to: (1) retain structural diversity and a biological legacy, and (2) retain scenic values.

The desired future condition is a stand with three or more distinct size classes. Natural regeneration is expected to be abundant.

Stands that receive this treatment would develop and maintain a multi-aged structure through the removal of some trees in various size classes distributed across the stand. Trees to be harvested would be selected using criterion such as species, diameter limits or spacing. A range of diameters, or everything above or below a certain diameter limit, may define the trees selected for harvest. Different diameters may be used for different species. The resulting stand may have small openings plus individual trees harvested throughout the stand. This would maintain or create a stand of three or more distinct size classes distributed throughout the stand, resulting in an uneven-aged stand.

Removing trees throughout the stand would retain a continuous large tree canopy following harvest. The residual stand would have structural diversity that would provide wildlife habitat and maintain scenic quality. Damage to the residual trees and lower commercial stand productivity is an acceptable resource tradeoff to achieve these goals. The next entry into these stands would be in approximately 75 years when 25 percent of the stands' basal area would be removed in patches or as single trees.

### 3.8.5 Silvicultural Prescriptions

Silvicultural prescriptions for the Kuiu Timber Sale were developed by a silviculturist to meet the objectives identified by the interdisciplinary planning team. The objectives for the proposed timber harvest units include: (1) timber sale economics, (2) future timber production, (3)

wildlife habitat, (4) soil stability, (5) scenic viewshed, (6) watershed stream channel stability, and (7) minimizing logging system damage to residual trees.

Prescriptions for the even-aged and two-aged management systems cover the entire rotation to provide guidance for intermediate treatments that may follow the harvests, including thinning and pruning. Prescriptions for the uneven-aged management system include the next entry into the stand in approximately 75 years (see the discussion in the previous section). However, the prescriptions are subject to change if the management direction changes, such as through Forest Plan amendments or a new Forest Plan. Table 3-55 displays the silvicultural prescriptions and yarding systems proposed for the Kuiu Timber Sale Area alternatives. Additional information on these project-specific prescriptions may be found in the introduction to the unit cards in Appendix B.

**Table 3-55. Acres<sup>a</sup> of silvicultural prescriptions by alternative**

Silvicultural System	Yarding System	Alt 2	Alt 3	Alt 4	Alt 5
<b>Even-aged Management</b>					
<b>Clearcut</b>	Shovel	10	12	119	149
	Cable	187	397	906	1059
Total acres even-aged management		197	409	1,025	1,208
<b>Uneven-aged Management</b>					
<b>Single Tree Selection, 50% BA retention</b>	Helicopter	0	0	148	0
	Cable	87	72	45	0
<b>Group Selection, 50% BA retention</b>	Cable	19	19	41	0
Total acres uneven-aged management		106	91	234	0
<b>Two-aged Management</b>					
<b>Clearcut with reserves 50% BA retention</b>	Cable	102	263	100	0
	Shovel	73	23	28	0
Total acres two-aged management		175	286	128	0

<sup>a</sup> Acres are gross acres and include the entire unit size and not actual acres harvested within the units.



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## 3.8.6 Forest Health and Natural Disturbance

### 3.8.6.1 Wind Disturbance

Wind is the major disturbing influence within the Project Area. Most of the south-aspect stands have evidence of periodic windthrow events where openings were created in which successive generations of trees, shrubs, and forbs were established. The most noticeable windthrow that has occurred in the Project Area to date is around the edges of old southeast facing clearcut units along road 6413.

Regarding windthrow in riparian buffers, the 2005 Tongass Monitoring and Evaluation Report states that buffers on south facing slopes were more prone to increased windthrow. Windthrow in riparian buffers on slopes other than those oriented to the south, however, was negligible.

### 3.8.6.2 Yellow-cedar Decline

The Project Area has a low incidence of cedar decline in the proposed timber harvest units. Yellow-cedar may be salvaged from the stands.

### 3.8.6.3 Dwarf Mistletoe

Dwarf mistletoe reduces the vigor and growth rate of hemlock and often produces a low quality of timber (Ruth and Harris 1979). Cankorous swellings often occur at the point of infection on limbs and main stems. These cankers offer an entrance for wood-destroying fungi, which can lead to heart rot.

The occurrence of dwarf mistletoe is relatively light within the Project Area.

### 3.8.6.4 Decay Fungi

Wood decay fungi play an important role in the structure and function of coastal old-growth forests where fire and wind disturbance are uncommon. In addition to creating canopy gaps and wildlife habitat, decay fungi play an important role in nutrient cycling. The importance of wood decay fungi in young managed stands is less well understood.

There is evidence of decay fungi throughout the Project Area. Approximately one third of the old-growth timber volume is defective in Southeast Alaska old-growth stands (USDA Forest Service 2003a). Although decay develops slowly, the longevity of individual trees allows ample time for significant amounts of decay to develop.

## 3.8.7 Direct and Indirect Effects

The structure of the forest would be affected by timber harvest. The effects would vary by the silvicultural prescription and the number of acres harvested. Partial harvest would maintain old-growth forest, but with fewer trees. The distribution of the trees would vary depending on the prescription. Removal of trees in patches would result in small openings that would develop into second-growth forest. Removal of trees dispersed throughout the stand would result in old trees

interspersed with regeneration of young trees. Forest health concerns, including the removal of trees with disease, or that face imminent mortality, can be used as factors determining which trees to harvest. Clearcut harvest would result in the creation of primarily second-growth stands with or without older residual trees.

None of the proposed alternatives are expected to have an adverse effect on the quantity or composition of cedar, or any other tree species, in the future. If regeneration surveys indicate that natural cedar regeneration is inadequate, cedar would be planted to ensure adequate stocking is maintained as described in the silvicultural prescription. Since both western redcedar and Alaska yellow-cedar are shade intolerant, overstory removal of hemlock could release cedar if advanced regeneration is present. Thinning of second-growth stands typically benefits cedar.

The proposed closure of NFS roads after the proposed harvest has the potential to increase the cost of future entries in the stands managed under uneven-aged silvicultural systems and could increase the cost or preclude intermediate treatments.

## 3.8.7.1 Alternative 1

Vegetation and forest health would not be affected by management activities. Tree growth and mortality would continue to progress naturally.

These stands would not contribute volume to the forest-wide sustained yield at this time as specified in the desired condition but may be available at a later date. Other forest lands with land use designations that allow timber harvest would need to meet the objective of providing timber for public consumption to meet market demand.

Stand growth and productivity would not be improved as recommended in the objectives for the LUD.

## 3.8.7.2 Alternative 2

In this alternative 197 acres would be converted to even-aged management. Forest health and commercial productivity would be improved by removing dwarf mistletoe infected trees and trees infected by disease, and by creating younger, faster-growing forests.

Approximately 106 acres would be managed in an uneven-aged system by removing a maximum of 50 percent of the basal area in groups  $\frac{1}{4}$ -acre to one acre in size on 19 acres and by removing a maximum of 50 percent of the basal area in individual trees dispersed throughout the stands on 87 acres. These stands would be harvested a second time in approximately 75 years. This second harvest would remove approximately 25 percent of the basal area. These stands would retain some of the old-growth characteristics of the forest (older

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trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers), but would also result in a forest with a lower net commercial volume.

An additional 174 acres would be harvested in a two-aged management system by harvesting a maximum of 50 percent of the basal area in patches and individual trees. These stands would not be re-entered for harvest until the end of the rotation (approximately 100 years). These stands would retain the structural diversity and biological legacy of the forest (older trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers), but the resulting forest would have a lower net commercial volume.

Of the action alternatives, this alternative would impact the fewest acres and harvest the least volume.

### 3.8.7.3 Alternative 3

In this alternative, 409 acres would be converted to even-aged management. Forest health and commercial productivity would be improved by creating younger, faster-growing forests.

Approximately 91 acres would be managed in an uneven-aged system by removing a maximum of 50 percent of the basal area in groups  $\frac{1}{4}$  to 1 acre in size on 19 acres, and by removing a maximum of 50 percent of the basal area in individual trees dispersed throughout the stand on 72 acres. These stands would receive a second harvest in approximately 75 years, which would remove approximately 25 percent of the basal area. These stands would retain some of the old-growth characteristics of the forests (older trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers), but would result in a forest with a lower net commercial volume.

An additional 286 acres would be harvested in a two-aged management system by harvesting a maximum of 50 percent of the basal area in patches and individual trees. These stands would not be entered for harvest again until the end of the rotation (approximately 100 years). These stands would retain structural diversity and biological legacy (older trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers), but the resulting forest would have a lower net commercial volume.

This alternative would impact the second lowest number of acres among the action alternatives and would harvest the second lowest volume of the proposed action alternatives.

### 3.8.7.4 Alternative 4

In this alternative, 1,025 acres would be converted to even-aged management. Forest health and commercial productivity would be



improved by removing dwarf mistletoe infected trees and trees infected by disease, thereby creating younger, faster-growing forests.

Approximately 234 acres would be managed in an uneven-aged system by removing a maximum of 50 percent of the basal area in groups ¼-acre to one acre in size on 41 acres and by removing a maximum of 50 percent of the basal area in individual trees dispersed throughout the stand on 193 acres. These stands would receive a second harvest in approximately 75 years. This second harvest would remove approximately 25 percent of the basal area. These stands would retain some of the old-growth characteristics of the forest (older trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers) but would result in a forest with a lower next commercial value.

An additional 128 acres would be harvested in a two-aged management system by harvesting a maximum of 50 percent of the basal area in patches and individual trees. These stands would not be re-entered for harvest for the rotation of the stand (approximately 100 years). These stands would retain structural diversity and biological legacy (older trees, wider variation in tree sizes and spacing, decadent trees, multiple canopy layers), but the resulting forest would have a lower net commercial volume.

This alternative would provide the greatest volume and impact the greatest number of acres of the action alternatives.

## 3.8.7.5 Alternative 5

In this alternative 1,208 acres would be converted to an even-aged forest. Forest health and productivity would be improved by removing dwarf mistletoe infected trees and trees infected by disease, and by creating younger, faster-growing forests.

All the stands proposed for harvest in this alternative would mimic the results of a large, naturally-occurring wind event with the stands converted to even-aged stands. No structural diversity, biological legacy, or old-growth characteristics would remain in the stand other than the reserve trees retained to meet site-specific resource objectives. Natural regeneration is expected to contribute to the stand being fully stocked with seedlings within three years of the regeneration harvest.

This alternative would impact the second largest number of acres among the action alternatives proposed in the Project Area and is the most economical. It is the only alternative that proposes even-aged management by clearcutting for all proposed harvest units.

In addition to the Kuiu Timber Sale EIS there is 482 acres of potential timber harvest available in the Project Area analyzed in the Crane and Rowan Mountain Timber Sales EIS.

## 3.8.8 Cumulative Effects

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Within the Kuiu Timber Sale Area, the catalog of past events documents that past harvesting has resulted in the conversion of 10,393 acres of old-growth forest to second-growth forest. Approximately 8,654 acres of these lands are on forested land within the suitable timber base (Table 3-56). The remaining 1,739 acres were harvested before Forest Plan land use designations were assigned and generally fall within what are now recognized as riparian reserves and beach fringe areas and are now designated by the Forest Plan as unsuitable for timber harvest. Thinning of second-growth or conversion to uneven-aged management may occur. All of the proposed harvest units with an uneven-aged management prescription have subsequent entries planned.

**Table 3-56. Cumulative acres of timber harvest by alternative**

29,362 acres of suitable forest land	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of harvest units proposed for this project	0	478	786	1,387	1,208
% of suitable forest acres proposed for this project	0	2	3	5	4
Acres of previous harvest on suitable forest	8,654 acres				
Acres of reasonably foreseeable future harvest in the Project Area	482 acres				
% Cumulative harvest of suitable forest	31	33	34	36	35

## 3.9 Fisheries

### 3.9.1 Introduction

Anadromous fish, such as salmon, spend part of their life in fresh water and part of their life in saltwater and use a variety of different stream habitats throughout their life (Sullivan et al. 1987). Limitations in habitat availability at any stage of development within a species' life cycle can potentially limit overall production. Forest harvest activities can potentially affect fish habitat by altering the amount and timing of runoff and altering sediment transport and deposition regimes (Sullivan et al. 1987), and by altering stream temperature (Beschta et al. 1987).

Spawning requires the availability of clean gravels of appropriate size with intragravel flows sufficient to deliver dissolved oxygen to buried eggs (Sullivan et al. 1987). Management activities, such as removal of vegetation, management-caused landslides, or poorly designed or maintained roads, may affect salmon spawning success if an excess of fine sediments is introduced.

The suitability of salmon spawning habitat is related to the capacity of stream flows to mobilize and scour bed substrates. Bed load movement can bury eggs to great depths, prohibiting fry emergence, or, alternatively, scour can remove or rework redds and crush incubating eggs or fry (Sullivan et al. 1987).

The Project Area includes approximately 33.7 miles of shoreline which contains diverse estuarine and tidal ecosystems that is habitat for shrimp, flatfish, marine worms, starfish, sponges, anemones, sea cucumbers, urchins, shellfish, plankton, marine algae, and other organisms. The shallow marine waters are vital habitat for some commercially important species, such as Dungeness crab and juvenile salmon.

#### 3.9.1.1 Stream Value Classes

Stream value classes are mapping units that indicate levels of habitat use by fish populations. Boundaries were delineated according to the following criteria, described in the Aquatic Habitat Management Handbook (FSH 2090.21).

**Class I** - Streams and lakes with anadromous or adfluvial fish or fish habitat, or high quality resident fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

**Class II** - Streams and lakes with resident fish or fish habitat and generally steep (6-25 percent or higher) gradient (can also include



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streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise do not meet Class I criteria.

**Class III** – Streams which are both perennial and intermittent that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. For streams less than 30 percent gradient, special care is needed to determine if resident fish are present.

**Class IV** - Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence on downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II, or III streams, and have a bankfull width of at least 0.3 meters (one foot).

The Class IV designation was created under the 1997 Forest Plan and was identified and mapped for each unit, and when possible, outside the units.

**Non-streams** - Rills and other watercourses, generally intermittent and less than one-foot in bankfull width, little or no incision into the surrounding hillslope, and with little or no evidence of scour.

## 3.9.2 Resource Inventory

During the summer of 2003 and 2004, field surveys were conducted to verify fish presence or absence, fish species, channel type, and stream value class. This information was incorporated into a GIS based inventory (see the Kuiu Fisheries Resource Report available in the Kuiu Timber Sale planning record).

## 3.9.3 Area of Analysis

The analysis area for direct and indirect effects to fisheries includes the following watersheds: Dean Creek (#109-50-10070), Saginaw Creek (#109-44-10390), Rowan Creek (#109-52-10060), Kadake Creek (#109-42-10300), Security Creek (#109-45-10100), and two unnamed watersheds (#109-44-10370 and #109-45-10090). In addition to these watersheds, there are several other watersheds and portions of watersheds within the Project Area. These watersheds are not analyzed because this project does not propose any harvest. However, one unnamed unnumbered watershed in the northern portion of the Project Area will be discussed in the fisheries cumulative effects section.

Each watershed is a topographically delineated catchment in which all surface water drains to a single stream. The downstream boundary for the watersheds is sea level. The watershed boundaries are large enough to allow a comprehensive accounting of all activities that may affect them. At the same time, the watershed boundaries are small enough to allow the analysis to be sensitive to the potential effects of the proposed activities.

### **3.9.3.1 Watersheds**

The north and east sides of Kuiu Island have had the most harvest. The Project Area is in northern Kuiu and encompasses seven watersheds. Table 3-28 in the Cumulative Effects of Logging and Road Construction on Watersheds section shows the acres harvested within each of these watersheds. The watersheds contain important fish habitat and is discussed in the following paragraphs. More detailed discussions on watersheds can be found in Section 3.5 this chapter.

#### ***Kadake Creek Watershed***

Kadake Creek watershed (ADF&G # 109-42-10300) is the largest producer of steelhead and salmon on Kuiu Island and is used by sport fishermen more than any other stream on Kuiu Island. It has approximately 71 miles of Class I and 18 miles of Class II stream. The lower portion of the stream is a Recreational River LUD due to its high fish values for steelhead, coho salmon, and cutthroat trout. Few other streams receive much angling pressure. Kadake Creek also has high wildlife, historic, scenic, and recreation values and extends beyond the project boundary.

The number of steelhead redds and adults has been counted in Kadake Creek for 10 of the last 12 years (1993-2004). Statistical analysis is incomplete and no obvious trends are evident.

#### ***Dean Creek Watershed***

The Dean Creek watershed (ADF&G # 109-50-10070) contains two small lakes with a total of 6.6 acres and approximately 10 miles of Class I and four miles of Class II stream habitat.

The Dean Creek fish pass was built in 1984 to provide coho salmon passage over a 13-foot waterfall. Coho fry were transplanted from three adjacent drainages (Rowan Creek, Security Creek, and Saginaw Creek) over a seven year period (1983-1989). The fish pass was modified in 1994 for pink salmon. In addition to coho and pink salmon, Dean Creek also has chum salmon, steelhead, and Dolly Varden (Johnson et al. 2004).

#### ***Security Creek Watershed***

The Security Creek watershed (ADF&G # 109-45-10100) does not contain any lakes. There are approximately ten miles of Class I and five miles of Class II stream habitat. Security Creek has populations of coho, pink, chum, and Dolly Varden (Johnson et al. 2004).

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### ***Saginaw Creek Watershed***

The Saginaw Creek watershed (ADF&G # 109-44-10390) contains one small lake and approximately 14 miles of Class I and six miles of Class II stream habitat. Saginaw has coho, chum, pink, steelhead, Dolly Varden, and cutthroat trout (Johnson et al. 2004).

### ***Rowan Creek Watershed***

The Rowan Creek watershed (ADF&G # 109-52-10060) has one large 19-acre lake and four smaller lakes which total one acre. There are 22 miles of Class I and 15 miles of Class II stream habitat. Rowan Creek has populations of coho, pink, sockeye, Dolly Varden, and cutthroat trout (Johnson et al. 2004).

### ***Watershed #109-44-10370***

This unnamed stream system drains into Saginaw Bay. It does not have any lakes but does have approximately three miles of Class I stream and six miles of Class II stream habitat. This stream has populations of coho, pink, and chum salmon as well as Dolly Varden, and steelhead (Johnson et al. 2004).

### ***Watershed #109-45-10090***

This unnamed stream system drains into Security Bay. It does not contain any lakes but it does have approximately one mile of Class I and three miles of Class II stream habitat. The fish species present are coho and pink salmon, and Dolly Varden (Johnson et al. 2004).

#### **3.9.3.2. Units of Measure**

The affects of the proposed Kuiu Timber Sale activities would be measured by the amount and duration of the fine sediment that may be introduced to the stream by logging activities, including road construction and reconstruction; the number of red culverts replaced; and the effects to the marine environment from the transporting of logs at the LTFs.

#### ***Fine Sediment***

Fine sediment can enter streams from log yarding and road construction activities; however, this effect is expected to be short-term (48 hours after construction). Hicks et al. (1991b) found that in some cases in Alaska, salmonid survival was apparently affected over the short-term when timber harvest activities increased the amount of fine sediment in spawning habitat. However, the amount of sediment in gravels returned to pre-logging conditions within five years. Because sedimentation may reduce oxygen levels to developing eggs in spawning gravel and/or trap emerging fry in the gravel, construction



timing windows for stream crossings on roads proposed for reconditioning or storage would be implemented. While individual fish may be impacted, the population as a whole is not expected to be affected. The placement of buffers and implementation of BMPs and standards and guidelines would reduce the amount of fine sediment entering the streams.

## ***Roads and Stream Crossings***

Guidelines for fish passage through culverts are specified in the Aquatic Habitat Management Handbook (FSH 2090.21). The guiding criteria for culvert design is to allow natural migration by adult and juvenile fish through the culvert during flows equal to or less than the discharge predicted to occur two days before or after the mean annual flood levels.

The miles of proposed NFS and temporary road construction vary between 3.3 and 10.4 miles, depending on the action alternative (see the Transportation section this chapter). Between 3.0 and 6.8 miles of existing NFS closed roads would be reopened (reconditioned) to access timber, depending on the selected alternative. When these roads were closed, the structures were removed; therefore reconditioning would include the installation of stream crossing structures (stringer bridges or culverts). Table 3-57 shows the existing and proposed stream crossings needing structures by stream class and alternative for the Kuiu Timber Sale Area.

**Table 3-57. Existing and proposed stream crossings needing structures by stream class and alternative**

Stream Class	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
I	0	3	2	3	3
II	0	3	4	5	5
III	0	1	8	14	15
IV	0	5	19	19	19

Road condition surveys assess the condition of existing roads, culverts, and drainage features. As part of this road survey, the fish crossings were analyzed to determine if juvenile fish can pass through the culvert at different flows. The fish crossings are categorized red, gray, or green. A red fish crossing is one that cannot pass juvenile fish at some or all flows, a green fish crossing is one that can pass juvenile fish at all flows up to the Q2 2-day flow (a two day delay from the

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mean annual flood), and a gray fish crossing needs additional analysis to determine if it is red or green. Within the Project Area, there are six gray culverts and 44 red culverts. Of the 44 red culverts, 11 are on Class I streams. One Class I stream and three Class II streams need upstream habitat analysis. Those culverts that have had upstream habitat analysis block, or partially block, approximately 2.4 miles of Class I habitat and 5.2 miles of Class II habitat.

An interagency group is currently working on a model that would help make management recommendations for the red culverts. The model was tested in 2006 and the preliminary findings are available. The model requires refinement and additional data needs to be collected before it can be used for all culverts on the forest.

There is an opportunity to remove red culverts on roads that would be closed after timber harvest is complete. Table 3-58 shows the NFS road, class of stream on which structures occur, and tells if the structure currently meets fish passage standards.

**Table 3-58. Proposed fish stream structure removal**

Alt	Road #	Class I Stream Structures Removed	Meets Current Fish Passage Standards	Class II Stream Structures Removed	Meets Current Fish Passage Standards
2	6413	1	Yes	1	No
	46096	1	Yes	0	
	6417	3	Yes	3	1 No
3	6413	1	Yes	1	No
	46096	1	Yes	0	
	6418	2	Yes	0	
	6417	3	Yes	3	1 No
4 and 5	6413	1	Yes	1	1 No
	46096	1	Yes	0	
	6418	2	Yes	0	
	6417	3	Yes	3	1 No

#### ***Marine Environment***

Log transfer facilities (LTFs) and log transport are the points of concentrated activity in the marine environment. The rest of the

shoreline is protected by a 1,000-foot buffer (Forest Plan). There are two existing LTFs in north Kuiu that could be used for the action alternatives (see the Timber Economics and Transportation sections of this chapter for further details). The Rowan Bay LTF and sort yard is approximately six miles south of the Project Area, and the Saginaw Bay LTF and sort yard is in the Project Area. The action alternatives would most likely use the existing administrative site at Rowan Bay or a floating camp to house the timber operators.

### **Rowan Bay LTF**

There are six anadromous fish streams that drain into Rowan Bay. Rowan Creek and Browns Creek are the largest producers. Rowan Creek has populations of coho and pink salmon, sockeye, Dolly Varden, and cutthroat. Browns Creek has populations of pink salmon, coho salmon, cutthroat trout, steelhead, Dolly Varden, and chum salmon. Average annual pink salmon escapement from 1993 to 2002 was 29,000. Dungeness crab is harvested from Rowan Bay and the surrounding area.

In 1996 Rowan Bay was placed on the Section 303(d)<sup>1</sup> list for bark debris accumulation from the LTF. The Alaska Department of Environmental Conservation (ADEC) database shows that a dive on July 15, 2002 to monitor the bark deposit had an area with continuous bark coverage of 0.81 acres which is compliant with water quality standards, resulting in its removal from the Section 303(d) list in 2003 (Foley 2006).

### **Saginaw Bay LTF**

This LTF would require reconstruction, but the “footprint” of the LTF would not change. An existing storage yard located near the LTF would be used if necessary. In addition to the storage area, a sort yard at the end of Road 6448, approximately one mile from the LTF site, is proposed for log sorting prior to storage at the LTF site.

There are five cataloged anadromous fish streams entering Saginaw Bay with Saginaw Creek and Straight Creek being the largest producers. Saginaw Creek and Straight Creek have populations of coho salmon, pink salmon, chum salmon, steelhead, Dolly Varden, and cutthroat trout (Johnson et al. 2004). Dungeness crab is harvested in Saginaw Bay. The close proximity to the community of Kake makes Saginaw Bay an important fishing area.

In 1998 Saginaw Bay was placed on the Section 303(d) list for bark debris accumulation from the LTF. Two dives were completed in 2002. The dive on May 30, 2002 was based on previous dives' layouts.

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<sup>1</sup> The 303(d) list identifies impaired waterbodies which require water quality assessments to verify the extent of pollution and what controls are in place or needed.



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The ADEC analyzed the dive and found the continuous bark accumulation to be 0.74 acres which is compliant with water quality standards, resulting in its removal from the Section 303(d) list in 2003 (Foley 2006).

## 3.9.4 Environmental Consequences

### 3.9.4.1 Direct and Indirect Effects

#### *Effects Common to all Action Alternatives*

Harvest units are designed so that all Class I and Class II streams that flow directly into Class I streams receive a minimum 100-foot buffer. Many stream channel types extend this buffer beyond the 100-foot minimum. Class III streams have no harvest buffer within the v-notch or to the break in side slopes (see unit cards for site-specific buffers).

All NFS roads that are reopened for this timber sale would be put back into storage after timber harvest is completed. NFS roads would be stored using any combination of tank traps, pulling culverts on the first part of the road, and blocking or gating the road. NFS roads in storage are system roads and may be reopened for future use. New NFS roads would be placed in storage after timber harvest is complete. All temporary roads would be decommissioned.

NFS Road 6417 is currently in storage and would have to be reopened in all action alternatives; this would require replacing the culverts on three Class I and three Class II stream crossings. All the streams are tributaries of Security Creek. Placement of the structures would cause a short-term (48 hours or less) increase in sedimentation from road construction and reconditioning. Increased sedimentation may affect individual fish by reducing oxygen levels to developing eggs in spawning gravel and/or trapping of emerging fry in the gravel. The effect is expected to be short-term and the placement of timing restrictions would minimize impacts to fish (see the Road Cards in Appendix B). While individual fish may be impacted, the population as a whole is not expected to be affected.

The following actions would restore approximately 636 feet of fish habitat in all action alternatives:

- Storage of Road 6413 would remove a culvert that does not meet current fish passage standards.
- Excess fill left on site from a prior culvert removal on Road 6417 would be removed restoring fish passage.

In all action alternatives the logs would be hauled to either the Rowan Bay or Saginaw Bay LTF where the contractor may either barge or raft the logs for transportation to the mill. Barging the logs would not affect marine species. If logs are rafted one potential effect of the LTF

on marine species may be diminished habitat for managed species and their prey due to bark accumulation. Another potential effect of log rafting is reduced rearing capability for juvenile salmon due to potentially reduced water quality from bark leachates and shading beneath log rafts and equipment floats.

### **3.9.5 Comparison by Alternative**

#### **3.9.5.1 Alternative 1 (No-Action Alternative)**

In this alternative, there would be no timber harvest, no roads would be built, and no additional roads would be put into storage. No changes in water yield, sediment delivery to streams, or fish passage are expected to occur except for naturally occurring events. This does not preclude regular maintenance of roads and the removal or replacement of culverts that do not allow fish passage.

The removal of culverts on road 6413 would not occur with this alternative and the red culvert would not be removed, restoring juvenile fish passage. On road 6417, the road fill would be left at the site and it would continue to cause fish passage problems.

#### **3.9.5.2 Alternative 2**

This alternative proposes the harvest of 9.6 mmbf of timber from 478 acres. Timber harvest in this alternative would require the construction of 1.5 miles of temporary road and 1.8 miles of new NFS road. There are 4.5 miles of NFS roads currently in storage that would have to be reopened, which would require replacing the culverts or bridges on three Class I streams and three Class II streams (Table 3-57).

This alternative would close an additional 7.8 miles of NFS roads after timber harvest is complete. The harvest would occur in six watersheds: Security Creek, Saginaw Creek, Rowan Creek, Kadake Creek, Watershed 109-45-10090, and Watershed 109-44-10070.

#### ***Effects***

Of all the action alternatives, fewer effects to fisheries are expected from this alternative.

This alternative has the fewest new stream crossings due to road construction, opens the second fewest miles of currently closed NFS roads, removes the same number of red culverts as the other action alternatives, and would transport the least volume of wood through the LTF. Road construction, installation of culverts and bridges, and the removal of culverts are expected to temporarily increase sediment delivery but are not expected to degrade fish habitat. Increased sediment may affect individual fish by reducing oxygen levels to developing eggs in spawning gravels and/or trapping emerging fry in the gravel, but the effect is expected to be short-term (48 hours or less) and the placement of timing restrictions would minimize impacts to fish (see the Road Cards in Appendix B). Alaska's Water Quality

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Standards require that waters which support the propagation of fish, shellfish and wildlife, and recreation in and on the water must be protected and maintained. BMP implementation will achieve state water quality standards.

## 3.9.5.3 Alternative 3

This alternative proposes the harvest of 15.9 mmbf of timber and the construction of 2.1 miles of temporary road and 5.4 miles of new NFS road. Road construction would require a log stringer bridge across a Class II stream to access Units 402, 403, 409, and 410 (Table 3-57). There are 3.2 miles of NFS roads that are currently in storage that would be reopened. Reopening NFS Road 6417 would require replacing two Class I and three Class II culverts or bridge crossings (Table 3-57).

With this alternative, an additional 8.0 miles of currently open road would be put into storage at the end of this project. The harvest would occur in five watersheds: Security Creek, Saginaw Creek, Rowan Creek, Kadake Creek, and Watershed 109-44-10370.

## *Effects*

This alternative has the second lowest total number of new stream crossings due to road construction. Because this is the only action alternative which does not harvest Units 111 or 401, it would have the fewest Class I stream crossings replaced. This alternative also opens the fewest miles of currently closed NFS roads, and has the second lowest volume of timber to be transported through the LTFs.

Road construction, installation of culverts and bridges, and the removal of culverts are expected to temporarily increase sediment delivery but are not expected to degrade fish habitat. Increased sediment may affect individual fish by reducing oxygen levels to developing eggs in the spawning gravels and/or trapping emerging fry in the gravel, but the effect is expected to be short-term (48 hours or less) and the placement of timing restrictions would minimize impacts to fish (see the Road Cards in Appendix B). Alaska's Water Quality Standards require that waters which support the propagation of fish, shellfish and wildlife, and recreation in and on the water must be protected and maintained. BMP implementation will achieve state water quality standards.

## 3.9.5.4 Alternative 4

This alternative proposes the harvest of 33.3 mmbf of timber and construction of 3.9 miles of temporary road and 6.5 miles of new NFS road. There are 6.1 miles of NFS road that are currently in storage that would be reopened. Road construction would require two new Class II stream crossings, and road reconditioning would require replacing



three Class I and three Class II stream crossings on Road 6417 (Table 3-57). After timber harvest is completed, an additional 10.5 miles of currently open road would be put into storage with all structures pulled. The harvest would occur in six watersheds: Security Creek, Saginaw Creek, Rowan Creek, Kadake Creek, Watershed 109-44-10370, and Watershed 109-45-10090.

### ***Effects***

This alternative, along with Alternative 5, would have the greatest potential for increased sedimentation into streams. These alternatives are the only ones that would construct a road to Unit 412, which would cross a Class I stream and a road to Units 402, 403, 409, and 410, which would cross a Class II stream. These alternatives would construct the most miles of road for the most total stream crossings (Table 3-57).

Although these alternatives would have the greatest potential for increased sediment delivery into the streams due to road construction, culvert and bridge installation, and culvert removal, the increased sediment delivery is expected to be temporary and is not expected to degrade fish habitat. Increased sediment may affect individual fish by reducing oxygen levels to developing eggs in spawning gravels and/or trapping emerging fry in the gravel, but the effect is expected to be short-term (48 hours or less). In addition, the placement of timing restrictions would minimize impacts to fish (see the Road Cards in Appendix B). Alaska's Water Quality Standards require that waters which support the propagation of fish, shellfish and wildlife, and recreation in and on the water must be protected and maintained. BMP implementation will achieve state water quality standards.

#### **3.9.5.5 Alternative 5**

This alternative proposes the harvest of 31.4 mmbf of timber and the construction of 3.5 miles of temporary road and 6.5 miles of new NFS road. There are 6.9 miles of road that are currently in storage that would have to be reopened. Road construction would require two new Class II stream crossings, and road reconditioning would require replacing three Class I and three Class II stream crossings on Road 6417 (Table 3-57). After timber harvest is completed, an additional 10.5 miles of currently open road would be put into storage with all structures pulled. The harvest would occur in six watersheds; Security Creek, Saginaw Creek, Rowan Creek, Kadake Creek, Watershed 109-44-10370, and Watershed 109-45-10090.

### ***Effects***

As discussed in Alternative 4, Alternatives 4 and 5 have the greatest potential for increased sedimentation into streams.

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Although these alternatives would have the greatest potential for increased sediment delivery into the streams due to road construction, culvert and bridge installation, and culvert removal, the increased sediment delivery is expected to be temporary and is not expected to degrade fish habitat. Increased sediment may affect individual fish by reducing oxygen levels to developing eggs in spawning gravels and/or trapping emerging fry in the gravel, but the effect is expected to be short-term (48 hours or less). In addition, the placement of timing restrictions would minimize impacts to fish (see the Road Cards in Appendix B). Alaska's Water Quality Standards require that waters which support the propagation of fish, shellfish and wildlife, and recreation in and on the water must be protected and maintained. BMP implementation will achieve state water quality standards.

### 3.9.6 Cumulative Effects

Cumulative effects are analyzed on a watershed basis and include all watersheds contained or partially contained within the Project Area. The Catalog of Events for Kuiu Island was referenced in determining cumulative effects to fish and all past, present, and reasonably foreseeable future management activities.

Past activities considered include the Dean Creek fish pass, which opened approximately 6.5 miles of stream for coho, pink, and chum salmon, steelhead and Dolly Varden. The Dean Creek fish pass increased fish populations within the Project Area. Past activities considered also include road construction and timber harvest (see the Catalog of Events for a complete list).

Cumulative effects for this project include the possible harvest of the remaining units from the Crane and Rowan Mountain Timber Sales EIS and road maintenance. Within the Project Area, the harvest units from the Crane and Rowan Mountain Timber Sales EIS are located in the Security Creek and Dean Creek watersheds, and an unnamed unnumbered watershed in the north portion of the Project Area. All but one of the units are helicopter units. Approximately 0.5 miles of new NFS road and 0.45 miles of road would be reconditioned to access Crane and Rowan Mountain Timber Sales Unit 399-13 which would require three Class III crossings.

The Crane and Rowan Mountain Timber Sales EIS states that the existing Rowan Bay LTF would be used to transport logs by barge. With this project either the Rowan Bay or Saginaw Bay LTF could be used. Logs could be barged or logs would be placed into the water and rafted for towing from the bays. Barging logs would not increase bark accumulation at either site. Log rafting would cause newly dislodged bark to accumulate at the sites. Annual monitoring would determine the amount of accumulation. If accumulation exceeds Environmental Protection Agency's National Pollutant Discharge Elimination System

(NPDES) permit standards, logs will no longer be placed in the water until monitoring determines that bark is no longer an issue.

According to the five-year timber sale schedule, there is no additional harvest scheduled in the Project Area.

The input of sediment to streams from the above-described activities would not be expected to effect fish populations or habitat. While there may be incidental death of fish due to this project, cumulatively considering all the timber and non-timber projects, the fish populations in the Project Area are well above naturally occurring levels.

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (the Act) states that all federal agencies must consult the National Marine Fisheries Service (NMFS) for actions or proposed actions that may adversely affect Essential Fish Habitat (EFH). In accordance with the August 25, 2000 agreement between the Forest Service, Alaska Region and the NMFS, consultation started when NMFS received a copy of the draft environmental impact statement (DEIS) which contained the EFH Assessment.

In the EFH assessment, the Forest Service determined that the Kuiu Timber sale may adversely affect EFH; however, this risk would be minimized or avoided through implementation of the Forest Plan standards and guidelines and best management practices (BMPs). The complete EFH can be found in the Fisheries Resource Report in the Kuiu Timber Sale planning record. NMFS concurred with our findings and made conservation recommendations. The Forest Service responded to their comments and consultation was completed. See Appendix C for the letter from the NMFS and the Forest Service's response.

### **3.9.7 Essential Fish Habitat Assessment**



## **3.10 Soils and Geology**

The following discussions are based on pre-existing data combined with additional data collected in the field for the Kuiu Timber Sale project, and is confined to the Project Area and proposed units. Applicable soils direction is included in the Forest Plan, Chapter 4 and Appendix C. General and site-specific mitigation measures are listed in the road and unit cards.

### **3.10.1 Karst**

Within the Project Area 6,624 acres of carbonate bedrock have been identified along the northeastern boundary. Karst develops where carbonates exist due to the action of water on soluble rock. The dissolution of the rock results in the development of internal drainage that can produce sinking streams, closed depressions, and other solution landforms such as sinkholes, collapsed channels, and caves.

The Tongass National Forest has developed management guidelines which strive to protect and maintain the function and biological significance of karst landscapes and caves found, per the requirements of the Federal Cave Resources Protection Act of 1988. All proposed alternatives have been modified so that no timber harvest, road construction, or quarry development would occur in these areas or along the drainages which flow to them.

### **3.10.2 Soils**

Scoping comments for the Project Area did not identify any specific soil related issues. The Forest Plan, however, has identified two concerns pertinent to proposed timber harvests that are applicable. The concerns are: 1) soil productivity loss due to roads, rock pits, and detrimental soil conditions created as a result of timber harvests, and 2) erosion due to management-induced mass wasting (i.e. various types of landslides: avalanches, debris and earth flows, soil creep, slumps, etc.).

Soil Quality Standards have been established to ensure that managed activities do not create significant impairment to the productivity of the land and directs that no more than 15 percent of an activity area be detrimentally disturbed through management practices (FSM 2554.03-10). National Forest System (NFS) roads are considered a dedicated use of the soil resource and are not included when calculating detrimental soil conditions, whereas temporary roads are included. Design criteria for new NFS road and the BMPs are included in Appendix B and respond to any soils concerns.

#### **3.10.2.1 Soil Productivity**

Deep well-drained soils are the most productive for tree growth. Maintaining soil drainage while minimizing soil erosion are both key to soil productivity in the Project Area due to high annual precipitation

and the overall topography of the area. Tree rooting in the area is generally shallow and soils are covered by thick matting created from accumulating and decaying organic matter.

### **3.10.2.2 Soil Disturbance and Erosion**

Soil disturbance is part of a natural and ongoing process within a forest ecosystem. Erosion is considered one phase of soil disturbance, initiated by natural processes such as heavy or consistent precipitation, landslides, and windthrow. Soil disturbance can also be initiated by land management activities (e.g. road construction, timber harvest, and rock pit development (Swanston 1995). The level of disturbance varies with management practices and site characteristics.

### **3.10.3 Mass Movement**

Mass movement ratings have been developed to assist management at the planning level for analyzing landslide potential. The value used to classify a rating or mass movement index (MMI) is explained in the Soils Specialist report available in the Kuiu Timber Sale planning record. The MMI ratings used, identified by Swanston (1995), are generally associated with the following slope gradients:

- MMI – 1 (low): 5 to 35 percent
- MMI – 2 (moderate): 36 to 51 percent
- MMI – 3 (high): 52 to 72 percent
- MMI – 4 (extreme): over 72 percent

Two landslide inventories within Southeast Alaska, based on different scales, provide a relative understanding of the relationship between timber harvests and landslides. The first inventory, conducted by Swanston and Marion (1991) was based on landslides over 100 cubic yards in size that occurred between 1963 and 1983 in Southeast Alaska. They found that landslides were 3.4 times more likely to occur in harvested areas than in unharvested areas. Swanston (1991) noted, “as a general rule, landslides in harvested areas are significantly smaller, occur at lower elevations, develop on gentler gradients, and tend to travel shorter distances [than naturally induced landslides]”.

The areas considered hazardous or most prone to landslides are those with steep slopes or areas with distinct slip-planes. During heavy rainfall or snowfall events these areas have a higher likelihood of failing, especially if previously disturbed by blasting for rock pits, road pioneering, side casting of excavated material, or ground-based logging (Swanston and Marion 1991).

In the other landslide analysis, slides that occurred in Southeast Alaska between 1971 and 1991 were reviewed and noted by Landwehr (1998, unpub.) from aerial photos, regardless of their size. Landwehr’s study

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also concluded that landslides are more likely to occur on harvested areas than what would occur naturally (Table 3-59).

**Table 3-59 Landslide studies by Swanston and Marion (1991) and Landwehr (1998 unpub.)**

20-Year Analysis	Landslides			
	Slides / unharvested acres	Slides / unharvested acres	Ratio between harvested and unharvested	Slides / mile of road construction
<b>Swanston and Marion (1991) 1963-1983</b>	1 slide/8,021 acres	1 slide/2,348 acres	3.42 higher in harvested	N/A
<b>Landwehr (1998, unpub.) 1971-1991</b>	1 slide/6,239 acres	1 slide/622 acres	10.03 higher in harvested	1 slide/19 mile

One factor associated with ground-based logging practices and subsequent landslides includes root deterioration following a harvest. Where steep slopes exist, slope sheer strength is provided by the binding action of the roots in the soil. Following harvest, root systems begin to decay and the soil-root fabric begins to weaken. The weakened soil-root fabric can further reduce the slope safety factor when a moderate storm or an increase in water pressure is realized from frequent precipitation or snow melt and may result in a landslide (Ziemer 1981). In the case of a clearcut harvest, root reinforcement is delayed for ten to fifteen years until new growth (particularly root density or weight) restores slope sheer strength and the binding action of the soil-root fabric.

At the Forest Planning level, areas with slope gradients of 72 percent or more are initially removed from the tentatively suitable timber base due to a higher risk of landslides; however, the Forest Supervisor or District Ranger at the project level may approve timber harvest on these slopes on a case-by-case basis. Their decision includes the consideration of an on-site analysis of slope stability (documented on a Soil Stability Investigation Report), an assessment of impacts of potentially accelerated erosion on downslope areas and downstream fish habitats, as well as other affected resources and economic factors.

#### 3.10.4 Existing Condition

##### 3.10.4.1 Past Actions

Approximately 22 percent of the Project Area has been harvested in the past 30 years, mostly from valley bottoms and gentle slopes (Table



3-60). Of the 10,393 acres already harvested, 6,911 were harvested prior to 1980 and have had more than 25 years for root net reinforcement and vegetative regrowth.

**Table 3-60. Acres previously harvested in the Kuiu Timber Sale Area by MMI Class**

MMI Class	Project Area Acres	Acres Harvested	% Hazard Class Harvested
<b>1 – Low</b>	19,284	5,273	27%
<b>2 – Moderate</b>	20,862	4,668	22%
<b>3 – High</b>	2,595	190	7%
<b>4 – Extreme</b>	3,361	262	8%
<b>Totals</b>	<b>46,102</b>	<b>10,393</b>	<b>22%</b>

#### **3.10.4.2 Mass Movement**

A landslide inventory specific to the Project Area was completed in December 2003 using aerial photos taken in 1998, and Forest Service land surveys completed in the 1960s and 1980s. Through the inventory, 57 known landslides were identified within the Project Area varying in size from 0.5 to 88 acres in both managed and natural non-managed areas. The 88-acre slide was a large rotational failure that occurred after a rain-on-snow event in December 1988. This slide today is partially revegetated and recovering. No units are proposed on or near this slide.

Predicting landslides is difficult due to the number of factors that are involved and their interaction with one another. Frequent precipitation and windthrow are two natural events, that, when combined with excessive soil disturbance and root deterioration, can be catalysts for a landslide.

The inventory of landslides in the Project Area found that per 1,000 acres, landslides for MMI-1 and MMI-2 soils were two times higher in harvested areas than in unharvested areas (Table 3-61 and Chart 3-4). For MMI-4 soils, there were almost three times as many landslides in harvested areas compared to unharvested areas. This inventory analysis supports previously referenced research which stated more landslides occur in harvested areas (Swanston and Marion 1991, Landwehr 1998, unpub.).

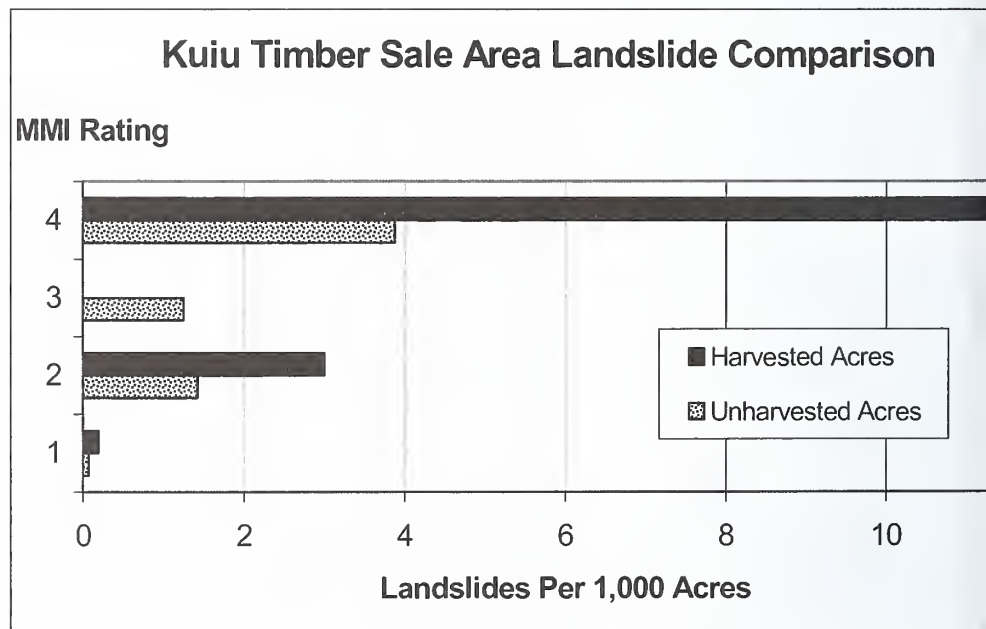
**Table 3-61. Inventory of landslides within the Project Area**

MMI Rating	Unharvested acres		Harvested acres	
	Number of Landslides	Number of slides/1000 acres <sup>a</sup>	Number of Landslides	Number of slides/1000 acres <sup>b</sup>
1 – Low	1	0.07	1	0.19
2 – Moderate	23	1.42	14	2.99
3 – High	3	1.25	0	N/A
4 – Extreme	12	3.87	3	11.45

<sup>a</sup> Ratio was developed from unharvested acres within the Kuiu Timber Sale Area Table 3-60.

<sup>b</sup> Ratio was calculated from harvested acres within the Kuiu Timber Sale Area Table 3-60.

**Chart 3-4. Kuiu Timber Sale Area landslide comparison**
















# Kuiu Timber Sale

Figure 3-10

MMI-3 and MMI-4 Soils within the Kuiu  
Timber Sale Area

## Legend

-  MMI-4 Extreme ( >72% Slope Gradient)
-  MMI-3 High ( 52-71%)
-  Productive Old-Growth
-  Managed Stands
-  Lakes/Saltwater
-  Unit Pool
-  Non-National Forest
-  Project Area Boundary
-  Stream Value Class I & II
-  Existing Open Roads
-  500ft Contour Interval
-  Roads in Storage (Closed)
-  Decommissioned Roads



0 0.5 1 2 3 4 Miles





# Kuiu Timber Sale

Figure 3-10

MMI-3 and MMI-4 Soils within the Kuiu  
Timber Sale Area

## Legend

- MMI-4 Extreme ( >72% Slope Gradient)
- MMI-3 High ( 52-71%)
- Productive Old-Growth
- Managed Stands
- Lakes/Saltwater
- Unit Pool
- Non-National Forest
- Project Area Boundary
- Stream Value Class I & II
- Existing Open Roads
- 500ft Contour Interval
- Roads in Storage (Closed)
- Decommissioned Roads







### 3.10.5 Environmental Consequences

#### 3.10.5.1 Methods

Data used for soil analysis comes from existing resources such as the Soil Resource Inventory (SRI), the landslide inventory, and field data collected through on-site surveys conducted throughout the summer of 2004. Road acres are based on an average road width of 40 feet (from top of cutslope to toe of fillslope) or 4.85 acres per mile.

Effects are estimated based on the following measures:

- Estimated acres of detrimental soil conditions in harvest units based on yarding method,
- Acres of timber harvest on slopes over 72 percent, acres of timber harvest by MMI Class and estimated numbers of landslides, and
- Cumulative acres of soil removed from productivity by roads, detrimental soil conditions within harvest units, and estimated numbers of landslides.

#### 3.10.5.2. Area of Analysis

The soils analysis area for the Kuiu Timber Sale is within the same boundary as that used to describe the boundary for the overall project (Kuiu Timber Sale Area Draft EIS, 1-10). The total area (46,102 acres) is selected as the boundary area for the soils analysis because it is naturally separated from surrounding areas by water along the northeast and northwest shorelines and by the general topography along the southeast, southwest and southern areas.

#### 3.10.5.3 Soil Productivity

Detrimental soil conditions are often created by harvest activities such as road building and yarding activities. Literature pertaining to actual acres of soil impacted through detrimental disturbance is limited for soils within Southeast Alaska; however, a survey was performed by Landwehr and Nowacki (1999, unpub.) where detrimental soil conditions were monitored as a result of a clearcut timber harvest on northern Prince of Wales Island. They found that partial suspension and shovel yarding within the clearcut harvest areas resulted in five percent disturbance of the acres harvested, and helicopter yarding resulted in three percent disturbance.

Table 3-62 shows an estimate of detrimental soil disturbance by alternative associated with harvest. Note the estimates given in Table 3-62 are based on clearcut harvest. The partial harvest prescriptions would likely result in less soil displacement, therefore the numbers presented are considered to be conservative.

### 3 Environment and Effects

**Table 3-62. Acres of detrimental soil disturbance from harvest and temporary road construction by alternative**

Soil disturbance	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Ground yarding <sup>a,b</sup>	0	24	39	62	60
Helicopter yarding <sup>a,b</sup>	0	0	0	5	0
Temporary road construction	0	7	10	19	17
<b>Total acres soil disturbance</b>	<b>0</b>	<b>31</b>	<b>49</b>	<b>86</b>	<b>77</b>
<sup>a</sup> HA = Harvest Acres <sup>b</sup> EDA = Estimated Disturbance Acres (5% ground yarding, 3% helicopter yarding)					

The intent of the Regional Soil Quality Standards is to maintain soil productivity within acceptable standards. The Standards allow up to 15 percent of the productive forestland to be in a detrimental condition. No harvest or road construction is planned for Alternative 1; any disturbance would be caused by natural events. All action alternatives would maintain the soil productivity within the acceptable standards. Alternative 4 is estimated to produce the highest number of acres of detrimental disturbance (86 acres), followed by Alternative 5 (77 acres), Alternative 3 (49 acres) and Alternative 2 (31 acres). As stated earlier, the acres may be overestimated for all action alternatives, with the exception of Alternative 5 because they include partial harvest units.

#### 3.10.5.4 Mass Movement

Based on analysis provided by Swanston (1991) landslide potential is projected to be higher (twice that in harvested versus unharvested areas) for all alternatives on MMI-1 and 2 soils, and three times as likely on MMI-4 soils. Table 3-63 shows the acres of proposed timber harvest by alternative within each MMI Class and Figure 3-10 shows the MMI-3 and MMI-4 soils within the Project Area. All proposed units with MMI-4 soils were determined stable through soil stability analyses.

**Table 3-63. Acres<sup>a</sup> of MMI in proposed units by alternative**

MMI Class	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>1– Low</b>	0	146	115	374	298
<b>2 – Moderate</b>	0	329	669	999	894
<b>3 – High</b>	0	2	2	0	2
<b>4 – Extreme</b>	0	0	0	14	14
<b>Total Acres</b>	<b>0</b>	<b>477</b>	<b>786</b>	<b>1,387</b>	<b>1,208</b>

<sup>a</sup> Variations in acres are the result of rounding.

If Alternative 1 is implemented, landslides in old-growth are still predicted to occur.

The landslide and MMI soils information indicates that Alternative 4 has the greatest potential for landslides of all the alternatives. This is due to the greater number of acres proposed for harvest (1,387 acres), the amount of harvest on MMI-4 soils (14 acres), and the amount of clearcut harvest proposed (1,024 acres).

Alternative 5 would have the second highest potential for landslides due to the greatest amount of clearcut harvest (1,208 acres), 14 acres of MMI-4 soils, and 2 acres of MMI-3 soils.

Alternative 3 would have the second least potential for landslides due to the amount of acres harvested (786 acres), no MMI-4 acres, and the low number of clearcut harvest planned (409 acres).

Alternative 2 would have the least potential for landslides due to the fewest acres of harvest (477 acres), no MMI-4 soils, and the fewest acres planned for clearcut (197 acres).

On-site evaluations resulted in deleting some acreage due to MMI-4 soils. For the acreage remaining, changes included specific silvicultural prescriptions such as partial suspension of the logs, partial to full retention of trees within the MMI area, or a recommendation that helicopter yarding be used; all of which are documented on the appropriate Unit Cards (Appendix B).

### **3.10.5.5 Roads**

Table 3-64 displays the miles of proposed road construction by alternative. As directed by the Forest Plan, no proposed new NFS and temporary roads would occur on slopes greater than 67 percent gradient, or on unstable soils.



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All temporary roads would be built to minimum size and width with few turnouts. At the end of this sale the temporary roads would be decommissioned with structures removed (culverts) and waterbars added (refer to Issue 4 – Cumulative Effects of Logging and Road Construction on Watersheds and the Transportation section of this chapter for more information on structures and closures). There is no mechanism provided for future maintenance on temporary roads; therefore, proper closure of these roads is critical for maintaining hydrologic conditions adjacent to the road.

Reconditioning of existing National Forest System (NFS) roads is also necessary on between 3.9 (Alternative 3) to 7.7 (Alternative 5) miles of road. Additional effects to soil productivity are expected to be minimal because the road prism is still in place. Sediment may be mobilized, but it is expected to be minimal and would be mitigated with Best Management Practices (BMPs). See Issue 4 – Cumulative Effects on Watersheds and the Fisheries sections in this chapter and the Unit Cards in Appendix B.

**Table 3-64. Miles of NFS and temporary road by alternative and MMI class.**

MMI Class	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
1 – Low	0	0.6	0.3	1.5	1.0
2 - Moderate	0	0.9	1.8	2.4	2.5
3 – High	0	0	0	0	0
4 - Extreme	0	0	0	0	0

#### 3.10.6 Cumulative Effects

The cumulative effects analysis area for soils was the Project Area. The Catalog of Events for Kuiu Island was referenced in determining cumulative effects. Cumulative effects of the proposed actions on long-term soil productivity are directly related to the amount of soil disturbance that occurs through time. Because Alternative 4 impacts soils more than any other alternative, its effects are analyzed for cumulative effects.

Using Landwehr's estimates to determine detrimental soil conditions (five percent and three percent for shovel and helicopter logging, respectively), it is estimated that 336 acres would be disturbed by temporary road construction and harvest (Landwehr 1999). For Alternative 4, this includes 86 acres of detrimental soil conditions, 234 acres from past activities, and 16 acres of reasonably foreseeable future activities cleared by the Crane and Rowan Mountain Timber Sales EIS. This equates to less than six percent disturbance from the past, present and reasonably foreseeable acreage involved (5,751

## Soils and Geology 3

acres), which is well below the 15 percent threshold stated in the Forest Service Standards and Guidelines (FSM 2554.03-10).

No other actions are planned in the foreseeable future within the Project Area. The Three Mile Timber Sale Area is on east Kuiu Island, outside of the Kuiu Timber Sale Area.

## Wetlands

### 3.11.1 Introduction

Wetlands are sites which generally have both saturated soils for at least a portion of the growing year and vegetation that is adapted to wet sites. They are valued for their physical, chemical and biological functions. Wetlands moderate flooding, reduce runoff and sedimentation, provide wildlife and plant habitat, and may help sustain stream flow during dry periods.

### 3.11.2 Wetland Types

Kuiu Island is a mosaic of forestland and wetlands. Based on the Soil Resource Inventory, approximately 17 percent of the Kuiu Timber Sale Area is classified with soils capable of supporting wetlands. Most of the wetlands are at the head of Saginaw and Security Bays, and at the top of the peninsula separating Security Bay from Saginaw Bay.

Different wetland types are found from sea level to mountain top. Resource values associated with these wetlands vary, depending on biological qualities, proximity to water bodies and position on the landscape.

Determining what constitutes high value wetlands is largely dependent on human use or the perceived benefit of the wetland. Because human perceptions change, the values we place on wetlands or upland ecosystems also change over time. There are two wetland habitat types in the Kuiu Timber Sale Area, covering approximately 200 acres, that are currently considered high value wetlands: estuaries (60 acres) and tall sedge fens (140 acres). No activities are proposed on these wetland types for this project. Listed below are the types and acres of wetlands found in the Kuiu Timber Sale Area. A detailed description of wetland types are in the Wetlands Resource Report available in the Kuiu Timber Sale planning record.

- Alpine/Sub Alpine Muskegs (1,027 acres or 2.2 percent)
- Alpine/Sub Alpine Forested Wetlands/ Meadow Mosaic (174 acres or 0.4 percent)
- Estuarine Wetlands (60 acres or 0.1 percent)
- Forested Wetlands (1,757 acres or 3.8 percent)
- Muskegs (987 acres or 2.1 percent)
- Muskegs/Forested Wetlands Mosaic (3,707 acres or 8 percent)
- Sedge Fens (140 acres or 0.3 percent)



### 3.11.3 Affected Environment

#### 3.11.3.1 Guidance

Direction is available in the Forest Plan Standards and Guidelines (p. 4-111), BMP 12.5, Wetland Identification, Evaluation and Protection, and Wetlands Executive Order 11988.

The Forest Service is required by Executive Order 11990 and Section 404 of the Clean Water Act to preserve and enhance the natural and beneficial values of wetlands whenever practicable while carrying out land management responsibilities.

Past harvest from wetland areas in the Project Area (approximately 325 acres) is minimal. Less than five percent of the previously harvested areas were on wetlands, including forested wetlands and wetland complexes. Less than 15 percent of the roads were built across wetlands to access timber.

#### 3.11.3.2 Timber Harvest

Most wetlands do not support productive forest and are not harvested; therefore, timber harvest usually only affects forested wetlands and some upland complex areas. The impacts that do occur are generally caused by roads and only impact a small percentage of wetlands on the Tongass.

Many of the forested wetland soils capable of supporting forests suitable for timber production were included in the suitable timber base during the analysis of the Forest Plan. Site productivity for tree growth is generally lower than on sites with better drainage. Regeneration is expected to occur within five years, just as with other forested sites (Julin and D'Amore 2003).

After harvest in a wetland area, vegetation changes on both low volume old-growth and young growth forest stands. A small and temporary increase in soil moisture is expected until transpiration and interception of rainfall is equivalent to pre-harvest conditions. These effects are common to all the action alternatives. Table 3-65 displays acres of timber harvested on forested wetland for each alternative.

**Table 3-65. Acres of wetlands previously harvested and proposed for harvest within the Kuiu Timber Sale Area by alternative**

Wetland Type	Existing Managed Stands	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Alpine/Subalpine Muskegs	15	0	0	0	0	0
Forested Wetlands	216	0	15	34	62	68
Muskegs/Forested Wetlands Mosaic	94	0	17	24	57	57
<b>Total Harvest</b>	<b>325</b>	<b>0</b>	<b>32</b>	<b>58</b>	<b>119</b>	<b>125</b>

### 3.11.3.3 Roads on Wetlands

For each action alternative, the amount of proposed NFS and proposed temporary roads within wetlands is small in proportion to the amount of wetlands within the Project Area and vicinity. While effects to wetlands from road construction associated with this and foreseeable projects may be long lasting, they are expected to be of limited extent and of little consequence due to the abundance of wetlands.

A direct effect to wetlands is the placement of fill material during the construction of temporary roads. Proposed temporary roads would cross forested wetland in all of the action alternatives and cross muskegs/forested wetlands mosaics in two of the four action alternatives (Table 3-66). There would also be a slight alteration of soil drainage for several feet on either side of the prism, which can be expected to alter vegetation in these areas. Drainage ditches normally collect and divert overland flow and shallow surface flow to the nearest stream channel. After timber harvest, temporary roads would be decommissioned by removing culverts from streams, bypassing ditch relief culverts with waterbars and adding extra waterbars as needed to control runoff.

**Table 3-66. Proposed temporary road miles crossing wetlands**

Wetland Type	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Forested Wetland</b>	0.0	0.01	0.1	0.4	0.4
<b>Muskeg/Forested Wetland Mosaic</b>	0.0	0.0	0.0	0.2	0.2
<b>Total Road Miles to be Constructed on Wetlands</b>	0.0	0.01	0.1	0.6	0.6

### 3.11.4 Comparison of Alternatives

#### 3.11.4.1 Alternative 1

Alternative 1 proposes no new road construction, no timber harvest and no road closure. This alternative would not be expected to alter the current wetlands state through management activities.

#### 3.11.4.2 Effects to the Action Alternatives

All NFS roads that are reopened for this timber sale would be put back into storage after timber harvest is completed. NFS roads would be stored using any combination of tank traps, pulling culverts on the first part of the road, and blocking or gating the road. NFS roads in storage are system roads and may be reopened for future use. New NFS roads would be placed in storage after timber harvest is complete. All temporary roads would be decommissioned. Closing the existing roads may restore some of the wetland functions. The prism would stay in place but drainage would be reestablished.

There are different amounts of wetland harvest and road construction on wetlands for each alternative (Tables 3-65 and 3-66). Among the action alternatives, the impacts from the proposed harvest and road building thru forested wetlands and muskeg/forested wetland mosaic types within the Kuiu Timber Sale Area are not considered significant. This is because there are no estuary or tall sedge fens affected and because the amount of forested and muskeg wetlands impacted would be relatively small in comparison to what is present on Kuiu Island.

### 3.11.5 Cumulative Effects

The cumulative effects analysis area was the Project Area. The Catalog of Events for Kuiu Island was referenced to determine cumulative effects. Cumulative effects include the past harvest of wetlands (approximately 325 acres), the currently proposed harvest discussed above, and the reasonably foreseeable future harvest of 482 acres and associated road building analyzed in the Crane and Rowan Mountain Timber Sales EIS - all within the planning area.

The predicted amount of detrimentally disturbed soil due to past, present, and foreseeable harvest (325, 125 and 6 acres, respectively) is



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less than six percent of wetland acreage for Alternative 5, the alternative with the most wetland acreage. Impacts to the Project Area would still be well below the Forest Plan standards and guidelines, which state that no more than 15 percent of an activity area can be detrimentally disturbed through management practices.

The proportion of wetlands to be impacted in all alternatives is considerably less than the total amount of wetlands available in the area. Many of the high value wetland habitats on the Tongass National Forest are protected either by land use designations or by standards and guidelines specifically addressing wetlands.

Cumulative effects to wetlands resulting from this project and reasonably foreseeable projects are expected to be minor. Effects from timber harvest are expected to be temporary. After timber harvest, it is expected that wetland function and habitat characteristics would be restored through natural processes of vegetation growth and succession. While effects to wetlands from road construction may be long lasting, they are expected to be limited due to the low number of road construction miles through wetlands

## 3.12 Transportation

### 3.12.1 Introduction

Forest roads are classified as National Forest System (NFS) roads, temporary roads and unauthorized roads by 36 Code of Federal Regulations (CFR) 212.1.

- A National Forest System road is “a forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority” (36 CFR 212.1). NFS roads are generally required to provide long-term or intermittent motor vehicle access. These roads receive constant or intermittent use depending upon the timing of the timber harvest(s) and other activities. NFS roads form the primary transportation network in the Project Area.
- A temporary road or trail is “a road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas” (36 CFR 212.1). Temporary roads are intended for short-term use and maintained for a limited time usually to access a timber harvest unit. Temporary roads are decommissioned by removing culverts and bridges after a timber harvest.
- Unauthorized roads are not managed as part of the forest transportation system. These include unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail. Roads that are no longer under permit or other authorization and have not been decommissioned are also considered unauthorized.

Decommissioning can occur for all three types of roads. On NFS roads, decommissioning removes the road from the long-term forest road transportation system. Otherwise, the act of decommissioning is the same for all roads, which can range from blocking the entrance and removing drainage structures to obliterating the road. The end result is the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1). For this project, temporary roads will be decommissioned by pulling all culverts and bridges, adding waterbars, and blocking the entrance of the road with a tank trap.

Maintenance and reconditioning of existing National Forest System (NFS) roads is an ongoing process that occurs on a periodic basis. Normally this kind of road work is determined to fit the category of routine repair and maintenance of roads that do not individually or cumulatively have a significant effect on the quality of the human environment and may be categorically excluded from documentation

# 3 Environment and Effects

in an EIS or an EA unless scoping indicates extraordinary circumstances (FSH 1909.15, 31.12, #4). The maintenance and reconditioning of NFS roads on the project area may occur before, during and after the project analysis. This work is done through separate service contracts to reduce the backlog of deferred maintenance, recondition roads to comply with best management practices, maintain the existing infrastructure for the proposed timber sale or future harvest entries, and other National Forest management activities. The timing of this work may coincide with this project's analysis but is not part of the proposed action or alternatives being considered. Any effects from the road maintenance and reconditioning work are included in the cumulative effects analysis for this project.

## **Changes in road type and mileage between the DEIS and the FEIS**

The Kuiu Timber Sale DEIS proposed the construction of up to 19 miles of temporary roads. In response to public concerns about roads across the Forest, the Interdisciplinary Team (IDT) took another look at the classification of these proposed roads. With further analysis of the Forest LSTA and possible future activities, the IDT reclassified some of the miles of temporary road as new NFS road.

A second notable difference between the DEIS and the FEIS is the total miles of roads built in each action alternative. In the DEIS, sections of temporary roads were counted twice in the total miles of new or reconstructed road. This error accounts for approximately 7 to 9 miles of road that are no longer in the total miles of new NFS and temporary road construction.

### **3.12.2 Road Access Management**

Road maintenance consists of periodic repairs to an existing road surface, in addition to brushing, and cleaning and repairing drainage features. These tasks are performed to keep the roads in the safe and useful condition for which they were designed. Repairs may be done as annual maintenance.

Road reconditioning is heavier maintenance of an existing road which includes work such as culvert replacement, surface rock replacement, and subgrade repair.

Road maintenance and reconditioning consist of performing the work necessary to retain or restore the road's original traffic service level. The amount and level of maintenance and repair is dependent upon traffic management objectives and maintenance criteria.

Roads are often built and operated at a higher maintenance level during the timber sale than they are afterwards. The operational maintenance level is the maintenance level assigned to a road which considers the immediate needs, road condition, budget constraints, and



environmental concerns; in other words, it defines the level at which roads would be maintained during the timber sale. The objective maintenance level is the maintenance level assigned to the road after timber harvest. It considers future road management objectives, traffic needs, budget constraints, and environmental concerns.

The definitions for maintenance levels (ML) originate from the Forest Service Handbook 7709.58. The purpose of the MLs is to define the level of service provided by, and maintenance required for, a specific road or segment.

- Level 1. Assigned to intermittent service roads that are closed to vehicular traffic. Emphasis is normally given to maintaining drainage facilities and runoff patterns. These roads may be placed into storage.
- Storage is a term used only for NFS roads. The physical on-the-ground changes may be similar to a decommissioned road; however, roads in storage are considered part of the long-term forest road transportation system and may be opened to vehicular traffic in the future. The process/action of storage involves closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use. Drainage structures in live drains may be completely removed to restore natural drainage patterns. Ditch relief culverts may be left in place and supplemented with deep water bars in order to minimize the cost of reusing the roads in the future.
- Level 2. Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Log haul may occur at this level. Most roads within the Project Area are ML 1 or ML 2.
- Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. There are two ML 3 roads in the Project Area.
- Levels 4 and 5 are maintained to higher levels of comfort for a driver in a standard passenger car. There are no ML 4 or 5 roads in the Project Area.

### 3.12.3 Road Analysis Process

Part of the analysis of the Project Area is to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and management of National Forest System lands. The minimum system is the road system determined necessary to:

- Meet resource and other management objectives adopted in the Tongass Land and Resource Management Plan,

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- Meet applicable statutory and regulatory requirements,
- Reflect long-term funding expectations, and
- Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

The Road Analysis Process (RAP) for the Project Area is a tiered, science-based system of analysis. The first layer is the Forest-wide RAP, which is an analysis of the Tongass National Forest. The second layer is the Kuiu Road Analysis which includes the Kuiu Timber Sale Area.

The road management objectives for roads used in this project are in Appendix B. Each of these roads is considered necessary for long-term management of the forest on either an intermittent or constant basis. The current status of the NFS roads in the Project Area, including those portions that delineate the Project Area, is listed in Table 3-67.

Changes in travel management policy and declining road maintenance budgets may prevent some of the other proposed recommendations from the 2001 Kuiu Road Analysis from taking place at this time. The Petersburg Ranger District Access Travel Management Plan will be completed in 2009 addressing transportation issues not related to this project.

## 3.12.4 Existing Roads

The roads in the Project Area are connected to a contiguous road system consisting of approximately 190 miles of NFS roads on the northern portion of Kuiu Island. These roads are not connected to any community, other public roads, or other public transportation systems. All of the NFS roads were constructed in support of timber sales and connect to Log Transfer Facilities (LTFs) in Rowan Bay and Saginaw Bay.

The Project Area has approximately 76 miles of existing NFS roads, including 4.4 miles of Road 6404 that runs from Rowan Bay LTF to Road 6402 outside the Project Area. Approximately 1.1 miles of Road 6402 is also outside the Project Area and connects the Project Area to Road 6404. These roads are included in this analysis because they could be used for administrative traffic to access the area and for log haul to Rowan Bay LTF, if an action alternative is selected.

Due to the remote location of Kuiu Island, there is very little public traffic. Most of the road use on the island is due to administrative use or logging, with some traffic from outfitter/guides and subsistence hunting.

**Table 3-67. Existing National Forest System Roads in the Project Area**

Road	Length (Miles)	Status	Road	Length (Miles)	Status
<b>6402</b>	14.5 (includes 1.1 miles outside Project Area)	Open	<b>6417</b>	3.67	Closed*
<b>6448</b>	0.81	Open	<b>6443</b>	1.3	Closed*
<b>46252</b>	1.10	Closed*	<b>6422</b>	0.24	Closed*
<b>46251</b>	2.13	Open	<b>6401</b>	1.03	Open
<b>6425</b>	6.47	Closed* past MP 4.65	<b>46094</b>	1.58	Closed*
<b>6403</b>	0.37	Closed*	<b>46091</b>	1.58	Closed*
<b>6441</b>	1.73	Open	<b>46152</b>	2.05	Closed*
<b>6442</b>	0.75	Closed*	<b>46154</b>	0.54	Closed*
<b>46098</b>	0.42	Closed*	<b>6415</b>	18.51	Open
<b>6427</b>	3.44	Closed* past MP 1.15	<b>6421</b>	0.46	Closed*
<b>6413</b>	2.84	Open	<b>6419</b>	0.39	Closed*
<b>46096</b>	3.80	Open	<b>46127</b>	1.43	Closed*
<b>6418</b>	1.70	Open	<b>6411</b>	0.80	Open
<b>46021</b>	1.38	Open	<b>46420</b>	2.27	Open
<b>6404</b>	4.4 miles outside Project Area	Open			

\* Closed is defined as undrivable to a highway vehicle.  
Closure may be due to manmade obstructions or vegetation.

### 3.12.5 Closing Existing NFS Roads

This document recommends closure of the proposed new NFS roads and many of the existing NFS roads that are related to this proposed timber harvest. Reasons for closure to public motorized traffic include declining road maintenance dollars and wildlife concerns. The Petersburg Ranger District Access Travel Management Plan scheduled for publication in 2009 will further address these issues.

All Maintenance Level 1 (ML 1) roads used or constructed for this project would be open only for authorized activities and would not be open at any time for public use. A range of options exist to closing roads and meeting ML 1 standards following the timber sale activities. However, the implementation of BMPs and effective motorized closure is required for proper storage with all ML 1 roads to insure



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appropriate resource protection, regardless of the methods used to close the road. Given this, the actions taken to most effectively and efficiently meet BMPs and close roads to motorized use can vary depending on individual road characteristics. In limited situations, effectively closing roads to motorized use may require only a permanent gate. Most ML 1 road closures, however, would require at least an adequately sized tank-trap somewhere near the road's beginning. Commonly roads require additional deterrents for the first quarter to a half mile, depending on circumstances. These deterrents are usually provided by, but not limited to, removing drainage structures such as culverts. Each road is evaluated for the most effective and efficient closure prior to project implementation.

## 3.12.5.1 Road Density

The Project Area has 56.2 miles of existing open NFS roads for an open road density of 0.78 mi/mi<sup>2</sup>. Table 3-68 lists the roads in the Project Area and their status. The action alternatives would physically close between 7.8 and 10.5 miles of existing NFS roads that are currently open in the Project Area (Table 3-69). These closures were recommended in the Kuiu Island Landscape Assessment (2005). The closed roads would be placed into storage by various methods. These roads could be re-opened in the future as needed. This project would decrease the mileage and density of NFS roads left open after timber harvest in each alternative except the No-Action Alternative, as shown in Tables 3-68 and 3-69.

**Table 3-68. Current and proposed open road density in the Project Area**

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Current open road density (mi/mi<sup>2</sup>)</b>	<b>0.78 miles per square mile</b>				
<b>Proposed open road density (mi/mi<sup>2</sup>)</b>	0.78	0.67	0.66	0.63	0.63
<b>Open road density during harvest (mi/mi<sup>2</sup>)</b>	0.78	0.87	0.90	0.96	0.97

## 3.12.6 Proposed NFS and Temporary Roads

The action alternatives propose between 1.8 and 6.5 miles of new NFS road construction to access timber harvest units (Table 3-69). Also, the action alternatives propose between 1.5 and 3.9 miles of temporary road construction to access timber harvest units (Table 3-69). All new NFS roads would be placed in storage and all temporary roads would be decommissioned after timber activities are complete.

**Table 3-69. Existing and proposed miles of open and closed NFS road and miles of proposed temporary road construction in the Project Area**

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Miles of open NFS road</b>	56.2	56.2	56.2	56.2	56.2
<b>Miles of closed NFS road to be temporarily opened for harvest</b>	0	4.1	3.0	6.1	6.8
<b>Miles of existing open NFS road to be placed into storage</b>	0	7.8	8.0	10.5	10.5
<b>Miles of new NFS road construction (stored after harvest)</b>	0	1.8	5.4	6.5	6.5
<b>Miles of open NFS road after harvest</b>	56.2	48.4	48.2	45.7	45.7
<b>Miles of temporary road construction</b>	0	1.5	2.1	3.9	3.5
<b>Total road cost (\$1000s)</b>	<b>\$0</b>	<b>\$553</b>	<b>\$1,209</b>	<b>\$1,656</b>	<b>\$1,764</b>

To provide access to timber harvest units, all of the action alternatives would recondition between 3.0 and 6.8 miles of existing NFS roads that are currently closed and in storage. All of these roads would be closed and put into storage after timber harvest is complete (Table 3-70). These road miles are included in the miles of reconstruction for cost.

NFS roads in southeast Alaska are more expensive to build than in other parts of the nation. The major factor that contributes to higher costs is obtaining the rock for the roadbed. Rock is produced by blasting bedrock, which is then hauled and shaped into a road over typically soft, uneven terrain. Other factors that contribute to the high cost of constructing Southeast Alaskan roads include the higher costs of shipping and labor, the numerous drainage structures needed and more complex logistics.

The Kuiu FEIS proposes approximately 2.8 miles of new road construction on decommissioned temporary roadbed. While this is considered new construction, the actual building cost would be lower. The adjusted cost for these segments of road is reflected in the average new NFS road cost per mile.

All road management would follow Best Management Practices (BMPs) and other applicable laws, regulations, and specifications. Refer to the Road Management Objectives in Appendix B for more information on specific BMPs.

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**Table 3-70. Existing NFS road miles that would closed after timber harvest**

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Roads currently drivable and/or with structures</b>					
6413	0	2.8	2.8	2.8	2.8
46096	0	3.6	3.6	3.6	3.6
6427	0	0	0	1.1	1.1
46021	0	1.4	0	1.4	1.4
6418	0	0	1.6	1.6	1.6
<b>Total Miles</b>	<b>0</b>	<b>7.8</b>	<b>8.0</b>	<b>10.5</b>	<b>10.5</b>
<b>Roads currently in storage to be opened to access units(s)</b>					
6417	0	2.3	1.3	2.3	2.3
6427	0	0	0	2.2	2.2
46091	0	1.0	1.0	1.0	1.0
46094	0	0.7	0.7	0.7	0.7
6422	0	0	0	0.5	0.5
6443	0	0.1	0	0.1	0.1
<b>Total Miles</b>	<b>0</b>	<b>4.1</b>	<b>3.0</b>	<b>6.1</b>	<b>6.8</b>

#### 3.12.7 Other Facilities

##### 3.12.7.1 Log Transfer Facilities (LTFs)

The transfer of harvested timber requires that logs be hauled to a site where they can be removed from trucks, transferred to saltwater for rafting or loading onto barges, and then towed to a mill. These sites are termed “log transfer facilities,” or “marine access points.” There is one LTF on the north end of the Project Area, Saginaw LTF, and one approximately six miles south of the Project Area, Rowan Bay LTF.

Access to the Rowan Bay LTF would require log haul over existing NFS roads 6402 and 6404, a distance of approximately 5.5 miles outside the Project Area. The Rowan Bay LTF is a steel piling bulkhead that was designed for use with a barge for loading logs. However, logs could also be rafted from this site. The Rowan Bay LTF is in good condition and would require no reconstruction for log transportation or storage.

Access to the Saginaw Bay LTF would require log haul over existing NFS roads 6402 and 6448, both of which are inside the Project Area. The Saginaw Bay LTF was designed to place the logs in the water for



rafting. While no reconstruction is necessary if logs are rafted, the LTF would need to be reconstructed prior to any barge use, which would require an amendment to the existing permit. The reconstruction would include a shot rock fill placed at the end of the existing filled area. The new ramp would be made of shot rock fill and would extend off the front of the existing fill area out into deep water.

Current permits for the construction and use of the LTFs include:

- Section 10 of the Rivers and Harbors Act of 1899 Corps of Engineers approval for the construction of structures or work in navigable waters of the United States
- Tidelands permit from the State of Alaska, Department of Environmental Conservation
- Certification of compliance with Alaska Water Quality Standards (Section 401 Certification) from the State of Alaska, Department of Environmental Conservation
- Storm Water Discharge Permit and a permit for discharge of bark and wood debris from the US EPA (Section 402 of the Clean Water Act)

## 3.12.7.2 Sort Yard

There is a sort yard, approximately 12 acres in size, located on the uplands adjacent to the Rowan Bay LTF. Due to its size and convenient location, it is not expected that any other sort yard would be needed for any of the action alternatives if Rowan Bay were selected as the LTF site.

There is an existing storage yard adjacent to the Saginaw Bay LTF for storing up to 200 mbf barge loads. In addition to the storage area, a sort yard at the end of NFS road 6448, approximately one mile from the Saginaw LTF site, is proposed for log sorting prior to storage at the LTF site. This sort yard would be located at the old logging camp site. This area is currently covered in alders, but the surface underneath is shot rock. The sort yard site would be approximately 400 x 800 feet in size and located on the existing flat terrain.

## 3.12.7.3 Logging Camp

There is an existing land camp at Rowan Bay about one mile south of the LTF. The camp has an Alaska Department of Environmental Conservation approved water and sewer system. This would be a typical camp for any timber operator that worked in this area. A floating camp could also be used during harvest activities. Appropriate permits would need to be acquired by the operator.

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## 3.12.7.4 Forest Service Facilities

There is a Forest Service administrative site located near the Rowan Bay logging camp. This site has a bunkhouse/office building and a separate equipment/generator building. The administrative site is used by Forest Service employees working in the Rowan Bay area.

## 3.12.7.5 Rock Quarries

There is a need for rock sources during the construction of new NFS roads and temporary roads, as well as for the maintenance of existing NFS roads within the Project Area. The rock source is preferably within one mile of the road construction or maintenance site.

Rock quarries are usually developed on a hillside by removing any trees and overburden above the bedrock, typically within five feet of the surface. The bedrock is drilled and blasted to produce rock that is one foot in diameter and less. It is used as an overlay to produce the road surface.

New rock quarries may be developed to support new road construction and road maintenance. Quarry sites would be developed within 500 feet of a road and avoid Class I and II stream buffers, old-growth habitat reserves, eagle and goshawk nest tree buffers and non-developmental LUDs. With either the expansion of an existing quarry or the development of a new one, the area footprint would not exceed five acres.

Listed below are roads that would require rock material if an action alternative is selected. Possible rock quarry sources are also listed.

- Construction of proposed Road 46030: An existing quarry at MP 0.1 could be expanded to provide material. A new site could be developed in the existing clearcut between MP 0.6 and MP 1.1.
- Construction of proposed Road 46031: A new quarry site could be developed in the existing clearcut between MP 0.0 and MP 0.4 to provide material.
- Construction of proposed Roads 46032 and 46033: The existing quarry on Road 46096 at the intersection of proposed Road 46032 could provide material. A new site could be developed in proposed timber Unit 208 between MP 0.2 and MP 0.8 on Road 46096.
- Construction of proposed Road 46034: The existing quarry at MP 0.1 could provide material. A new site could be developed between MP 0.5 and MP 0.9.
- Construction of proposed Road 6427 (MP 3.44 – MP 3.66): The existing quarry at MP 1.7 could provide material. A new site could be developed between MP 0.5 and MP 0.9.

- Construction of proposed Road 46021 (MP 1.38 – MP 1.98): The existing quarry at MP 0.6 could provide material. A new site could be developed between MP 1.0 and MP 1.4.
- Reconditioning of existing Road 6417: The existing quarries at MP 0.5, MP 1.2, and MP 1.4 could provide material.
- Reconditioning of existing Road 6427: The existing quarry at MP 1.7 could provide material.
- Reconditioning of existing Road 6443: The existing quarry at MP 0.66 could provide material, as well as the existing quarry at MP 1.4 on Road 6417.
- Reconditioning of existing Road 6422: The existing quarries at MP 1.2 and MP 1.4 on Road 6417 could provide material.
- Reconditioning of existing Road 46091: The existing quarries at MP 0.8 could provide material, as well as the existing quarry at MP 6.3 on Road 6415.
- Reconditioning of existing Road 46094: The existing quarry at MP 0.9 could provide material, as well as the existing quarry at MP 12.8 on Road 6402.

## 3.12.8 Comparisons of Alternatives

The effects of the transportation system on other resources are discussed in the specific resource sections. This section focuses on the transportation system by alternative and discusses post-project management.

### ***Alternative 1***

The maintenance of existing NFS roads would not change. Existing open NFS roads would not be placed into storage and no new NFS roads are proposed.

### ***Actions Common to all Action Alternatives***

- All new NFS roads would be placed into ML 1 and stored after timber harvest activities.
- Reconditioning of currently closed NFS roads needed for accessing timber units would consist of removing blowdown trees, brushing, regrading of the existing roadbed, and clearing road ditch lines and drainage channels. Reconditioning also involves reinstalling culverts at drainage and stream crossings. These roads would be placed into ML 1 and stored after timber harvest activities. All temporary roads would be decommissioned after timber harvest.

### ***Alternative 2***

- Construct 1.8 miles of new NFS road.



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- Construct 1.5 miles of temporary road.
- Place three existing open NFS roads, totaling about 7.8 miles, into ML 1 and close after timber harvest activities are complete.
- Recondition 4.1 miles on four NFS roads that are currently closed.

## ***Alternative 3***

- Construct 5.4 miles of new NFS road.
- Construct 2.1 miles of temporary road.
- Place three existing open NFS roads, totaling about 8.0 miles, into ML 1 and close after timber harvest activities are complete.
- Recondition 3.0 miles on three NFS roads that are currently closed.

## ***Alternative 4***

- Construct 6.5 miles of new NFS road.
- Construct 3.9 miles of temporary road.
- Place 10.5 miles on five existing NFS roads in ML1 and close after timber harvest activities are complete.
- Recondition 6.1 miles on five NFS roads that are currently closed.

## ***Alternative 5***

- Construct 6.5 miles of new NFS road.
- Construct 3.5 miles of temporary road.
- Place 10.5 miles on five existing NFS roads in ML 1 and close after timber harvest activities are complete.
- Recondition 6.8 miles on six existing NFS roads that are currently closed.

## ***Summary***

All of the proposed action alternatives would reduce the amount of open NFS road by placing them into storage after timber harvest activities. In turn, this would reduce the amount of road maintenance required in the Project Area. Because these roads receive little use, the amount of use is not expected to change significantly as a result of these closures.

### **3.12.9 Cumulative Effects**

The cumulative effects analysis for transportation includes the entire road system on Kuiu Island and focuses on miles of open NFS road. The Catalog of Events for Kuiu Island was referenced to determine the effects considered in this analysis.

All of the proposed alternatives would reduce the amount of open NFS road by placing them into storage after timber harvest activities are complete. The changes on the Kuiu road system are not expected to effect long-term access or travel management. During the timber sale there would be periods of time where the timber purchaser maintains certain existing roads. Roads may also be temporarily blocked to move equipment or due to safety concerns during logging operations. These temporary conditions would not have a cumulative long-term effect.

All of the action alternatives and several reasonably foreseeable future activities would add new NFS roads to the Kuiu road system. The foreseeable future activities include: Crane and Rowan Mountain Timber Sales and the Threemile Timber Sale. These two projects could construct an additional 6.6 miles of new NFS roads and 3.3 miles of temporary roads. The new NFS roads would be closed and placed in storage after timber harvest activities. Temporary roads would be decommissioned after timber harvest. Cumulatively, open NFS miles would decrease within the Kuiu road system.

The Petersburg Ranger District Access and Travel Management (ATM) Plan will look at road access across the District in terms of needs, resource use and protection, and declining road maintenance budgets. It will consider all roads, including nonsystem roads as well as the closure of more road miles on Kuiu Island. If the decision is made to close more roads on Kuiu, the amount of road maintenance required would be reduced. Roads would be turned from ML 2 into ML 1 resulting in considerable maintenance savings. This would provide additional funding for maintenance on the remaining open roads. The District ATM will be completed in 2009.

Maintenance of existing National Forest System roads has occurred and will continue to occur in the Project Area as long as future funding is available. On Kuiu Island major contract road maintenance (costing over \$100,000) is generally performed every three to four years on most of the ML 3 roads and on a few of the ML 2 roads. This major maintenance contract generally includes blading, brushing, clearing culvert inlets and replacing failed culverts. In addition, hand road maintenance is performed annually on most of the ML 2 and ML 3 roads. Hand maintenance involves clearing blown down trees from the roadway after the snow has melted in the spring..

Road maintenance and reconditioning projects since the DEIS include the Kuiu Road Maintenance CE 2006, which included routine reconditioning and brushing of several of the most heavily used ML 3 roads on Kuiu Island.

## 3.13 Scenery

Scenery is an important aesthetic quality of Tongass National Forest System lands. The Forest Plan recognizes this and addresses the degree of acceptable alteration of the landscape by assigning Visual Quality Objectives to each land use designation. These objectives are based on the visibility of the landscape from identified Visual Priority Routes and Use Areas (Appendix F of the Forest Plan) which form Viewsheds and represent the area of analysis.

### 3.13.1 Visual Character

Southeast Alaska scenery encompasses mountains, glaciers, water, sky, weather, trees, animals, boats, people, and development. While there are an infinite number of personal interpretations of scenery, the Forest Plan assumes general preferences based on cultural norms and predominant social values. The quality of the scenic environment can be categorized in terms of visual character types.

### 3.13.2 Existing Condition

#### 3.13.2.1 Character and Variety Class

Visual character types provide a framework for defining the quality or distinctiveness of scenery. Each character type contains unique features of landforms, vegetative patterns, water forms, or geologic features. The greater the diversity of form, line, texture, and color in a landscape, the greater the scenic value. There are six distinct visual character types represented on the Tongass National Forest. North Kuiu Island lies within the Kupreanof Lowland visual character type.

The natural landscape within character type is described in terms of scenic value and placed into three variety class designations (USDA Forest Service 1973). The variety classes are described below with the acres of each within the Project Area. For a detailed description, see the Scenery Resource Report available in the Kuiu Timber Sale Area planning record.

**Variety Class A:** Kupreanof Lowland, Distinctive. The amount of Variety Class A within the Project Area is quite small (291 acres) and confined to an area of shoreline in upper Security Bay.

**Variety Class B:** Kupreanof Lowland, Common. The amount of Variety Class B encompasses approximately 59 percent of the Project Area (27,336 acres) and consists of the forested mountain slopes.

**Variety Class C:** Kupreanof Lowland, Minimal. Variety Class C encompasses approximately 41 percent of the Project Area (18,475 acres) and consists of relatively flat terrain scattered throughout the Project Area.



### 3.13.2.2 Visual Priority Travel Routes and Use Areas

The Forest Plan identified specific locations from which scenery is viewed, reflecting high visitor use and a greater public concern for scenic quality. These Visual Priority Travel Routes and Use Areas are used to assess scenic condition and the locations from which scenic value is to be emphasized. Areas visible from Priority Travel Routes and Use Areas are described in scenery resource terms as the “seen area.” “Seldom seen” or “not seen” areas are defined as those locations not viewed from any position along a Visual Priority Travel Route and Use Area.

Viewing locations within the Project Area from which scenic quality is measured in this analysis include Rowan Bay, Security Bay, Saginaw Bay, Kadake Bay, and Kadake Creek. The Project Area is also viewed at a distance (3-5 miles) from Frederick Sound, but is seen in closer proximity from either Saginaw Bay or Security Bay where the potential effects would be greater.

All the Visual Priority Travel Routes and Use Area destinations surrounding the Project Area receive intermittent to moderate use over the course of the year, much of which is seasonal in nature. Those viewing the landscapes are primarily passengers of the Alaska Marine Highway System, commercial fishing vessels, fishing and whale watching charter boats, and small recreational boats involved in camping, hunting, fishing, or subsistence activities.

### 3.13.2.3 Visibility and Distance Zones

Visibility, mapped in terms of distance zones, is a measure of how visual changes are perceived in the landscape. Changes in form, line, color, and texture become less perceptible with increasing distance. The Forest Service describes visibility in terms of three distance zones: foreground, middleground, and background (USDA FS 1974). Each distance zone is listed in detail in the Scenery Resource Report which is available in the Kuiu Timber Sale planning record. Project Area visibility from Visual Priority Travel Routes and Use Areas is displayed in Table 3-71.

**Foreground: (0 - ½ mile from the viewer)** –Foreground viewing areas include a portion of the Security and Saginaw Bay shoreline and areas within the Kadake Creek river corridor.

**Middleground: (½ - 3 to 5 miles from the viewer)** - Middleground viewing of the Project Area includes most of the prominent forested ridges visible from saltwater.

**Background: (3-5 miles and greater)** - There are no background viewing locations inventoried within the Project Area.

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**Not Seen:** Those landscapes within the Project Area which are not visible from Visual Priority Travel Routes and Use Areas as a result of topographic relief or other physical attributes.

Approximately 70 percent of the Project Area is categorized as not seen from Visual Priority Travel Routes and Use Areas.

**Table 3-71. Acres of harvest in distance zones by alternative**

Distance Zone	Alt 2	Alt 3	Alt 4	Alt 5
Foreground	18	0	49	0
Middleground	144	246	500	455
Background	0	0	0	0
Not Seen	316	540	838	753
Total Harvest Acres	478	786	1,387	1,208

## 3.13.2.4 Existing Visual Condition (EVC)

Existing Visual Condition (EVC) describes the visual appearance of the landscape at the time the assessment is conducted. It excludes the context of whether the landscape is seen or not seen from Visual Priority Travel Routes and Use Areas and indicates the amount of change that has occurred in the past and what level of change may be acceptable in the future. The relevance of EVC for this analysis is to use the present visual condition of the Project Area as a baseline to evaluate the acceptable desired future condition and cumulative effects outlined in the Forest Plan management prescription criteria. Six levels are used to describe the landscape's EVC ranging from pristine to intensively modified:

**Type I:** Landscapes where only ecological change has occurred, except for trails needed for access. Landscapes appear to be untouched by human activities.

**Type II:** Landscapes where change is not noticed by the average forest visitor unless pointed out. These landscapes have been altered but changes are not perceptible.

**Type III:** Landscapes where changes are noticeable by the average forest visitor, but they do not attract attention. Changes appear to be minor disturbances.

**Type IV:** Landscapes where changes are easily noticed by the average forest visitor and may attract attention. Changes appear as disturbances but resemble natural patterns in the landscape.

**Type V:** Landscapes where changes are very noticeable and would be obvious to the average forest visitor. Changes tend to stand out, dominating the view of the landscape, but are shaped to resemble natural patterns.

**Type VI:** Landscapes where changes are in glaring contrast to the landscape's natural appearance. Changes appear as dramatic, large scale disturbances that strongly affect the average forest visitor.

The Existing Visual Condition of the Project Area is primarily in a Type V, as evidenced by the amount of timber harvest that has occurred over the past 20 years. This condition however is not as apparent when viewed from saltwater locations where regeneration of the larger and older logging units has begun to visually recover. EVC Type V rating is more a result of the extent of harvest than the direct visual appearance when viewed in close proximity or from visual priority viewing locations, and is reflective of the desired condition of the Timber Production land use designation.

**Table 3-72. Project Area Acres by Existing Visual Condition**

Existing Visual Condition	Acres
Type I	8,484
Type II	434
Type III	36
Type IV	8,023
Type V	25,020
Type VI	4,105
<b>Kuiu Project Area</b>	<b>46,102</b>

### 3.13.2.5 Visual Quality Objectives (VQO)

Visual Quality Objectives (VQOs) provide measurable standards to assess the scenery resource based on landform characteristics and levels of public concern. VQOs are established by incorporating the previously defined visual resource elements of variety class, viewing sensitivity, and distance zone. Adopted VQOs are established during the forest planning process. Adopted VQOs help govern the location, design, scheduling, and level of management activities, such as timber harvest, to achieve or maintain the desired future condition. The Forest Plan adopted the following four VQOs as management direction:

**Retention** - Changes in the landscape are not visually evident to the average forest visitor.



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**Partial Retention** - Changes in the landscape may be evident to the casual observer but appear as natural occurrences when contrasted with the appearance of the surrounding landscape.

**Modification** - Changes in the landscape appear very evident but incorporate natural patterns of form, line, color, and texture when contrasted with the appearance of the surrounding landscape.

**Maximum Modification** - Changes in the landscape appear highly evident and may visually dominate the surrounding landscape, yet when viewed in the background distance these activities appear as natural occurrences.

Adopted VQOs reflect the management objectives of the Forest Plan land use designations (LUDs) incorporating other resource objectives, and also represent a future visual condition planned for a particular landscape. The VQOs within the Project Area include Maximum Modification (Timber Production LUD), Modification (Timber Production LUD), Retention (Old-growth Habitat LUD), and Partial Retention (Recreational River LUD within the ¼-mile corridor of Kadake Creek) (Figure 3-11).

Management emphasis would reflect activities that may appear highly evident in those areas maximizing timber production and maintaining a natural appearance in other locations. The Old-growth Habitat Reserve would be retained in a natural condition where the Retention VQO is applied and no harvest would occur. The acres of Forest Plan VQOs within the Project Area are displayed in Table 3-73.

**Table 3-73. Project Area acres by Forest Plan adopted visual quality objective**

Adopted Visual Quality Objective	Acres
Retention (Old-Growth Habitat LUD)	1,245
Partial Retention (Recreational River)	1,595
Modification (Timber Production LUD)	3,365
Maximum Modification (Timber Production LUD)	39,541
Non-National Forest System Lands	356
Kuiu Timber Sale Area Total	46,102

## 3.13.3 Environmental Consequences

Timber harvest within a portion of the Project Area visible from Visual Priority Travel Routes and Use Areas would be designed and implemented to meet the Forest Plan adopted VQOs. The future visual

condition of the affected landscape would reflect the Timber Production LUD, where the primary goal is to manage land for the sustained long-term yield of wood. The visual effects of management activities in this LUD would be more noticeable than they would be in a LUD that allows less development.

Several factors contribute to the degree of visibility of the proposed activities. These factors include: (1) the location from where development is visible, (2) the distance from which the development is observed, (3) the vegetative composition of the surrounding landscape, and (4) the design outcome of the activity.

### **3.13.4 Direct and Indirect Effects**

Each of the action alternatives would result in some visual modification of the landscape in the Project Area. For all of the action alternatives, the majority of harvest units would not be visible from Visual Priority Travel Routes Areas. The visible harvest would be prominent for viewers entering upper Saginaw Bay under either Alternative 3 or 5. For Security Bay the most visible change would occur under Alternatives 4 and 5. Forest visitors also would notice one harvest unit when entering upper Rowan Bay under implementation of Alternatives 4 or 5. Under Alternative 2 visitors frequenting Security Bay, Saginaw Bay, or Rowan Bay would not likely notice much change beyond existing conditions. Harvest within the Kadake Creek recreational river corridor would only occur under Alternatives 2 and 4. The visual change under these alternatives would resemble a natural forest setting.

The overall scenic effect of the alternatives would vary in comparison to the visible harvest area as seen from sensitive viewing locations. Alternatives 4 and 5 would create the greatest amount of visible change to the landscape from development of harvest units. Alternative 3 would harvest approximately 50 percent fewer acres than would Alternatives 4 and 5. Alternative 2 would have the least effect, harvesting approximately 162 acres potentially visible from priority viewing areas.

#### **3.13.4.1 Effects Common to all Action Alternatives**

Each of the action alternatives would result in some degree of change in the appearance of the landscape. Green tree retention within some units would reduce the overall effects. Additionally, all of the proposed timber harvest of any given alternative would not be seen at one time from a single location. Impacts to scenery for all alternatives would remain relatively constant over time as harvested areas develop and new stands are removed. All action alternatives would achieve a higher level of visual quality than the Adopted Visual Quality

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Objective of Maximum Modification for the majority of the Project Area.

Utilization of the existing LTFs either at Rowan Bay or Saginaw Bay for log transfer, storage, and camp operations would result in the developed appearance and modification to the scenic environment associated with these types of activities. The LTFs are visible in the foreground distance zone along the shoreline near the head of these bays. For those traveling the inside waters of Rowan Bay or Saginaw Bay the logging operations would not likely be noticed until within ¼ to ½ mile of the locations. The sort yard, area for log storage, and most equipment at the sites would be partially screened from view by foreground vegetation and would meet the Forest Plan VQOs.

Contractors harvesting timber would continue to support their operations with either a land or floating camp. Visibility of these activities would be a distraction from the natural scenic environment, but confined to a relatively small area, and would be consistent with the VQOs. Camp operations would be required to obtain and follow the necessary permitting requirements associated with these activities.

Some of the effects of temporary and new road construction, borrow pits, and other ground disturbing activities necessary to implement the Kuiu project would be visible from Visual Priority Travel Routes Area; however, these effects would be far less visible than timber harvest and would meet the Forest Plan VQOs.

## 3.13.5 Effects by Alternative

### Alternative 1

This alternative defers timber harvest in the Project Area and maintains the existing visual character of the landscape. Previously harvested units within the Project Area would continue to mature and develop the visual characteristics of a more natural appearing and undeveloped forest.

### Alternative 2

Six harvest units are partially visible from Visual Priority Travel Routes and Use Areas. However, all six are not visible from the same location.

Portions of Units 103c and 111, which have a Maximum Modification VQO, are in the seen area of upper Security Bay. The effects of partial harvest on unit 111 would achieve a Partial Retention VQO, and meet a higher degree of scenic quality than required by the Forest Plan.

Portions of Units 207, 208a, and 208b would be visible near the head of Saginaw Bay, resulting in a VQO of Maximum Modification. The effects of Unit 207 would be lessened by 50 percent basal area retention which would achieve a higher VQO of Modification. Unit



208a would achieve the Partial Retention VQO with 16 acres of visible harvest. Unit 208b would result in a Maximum Modification VQO with 51 visible acres.

Unit 415 is located in the Kadake Creek drainage, and partially within a Forest Recreational River classification. Visibility of harvest from Kadake Creek itself would not be readily apparent as a result of the steep stream bank configuration and trees bordering the edge of creek. The portion of Unit 415 within the Recreational River corridor would meet the adopted VQO of Partial Retention. The remainder of Unit 415 located within the Timber Production LUD would achieve a Modification to Maximum Modification VQO.

Alternative 2 proposes harvesting the fewest acres visible from priority viewing locations. The remaining units in this alternative are not visible from any Visual Priority Travel Routes and Use Area and achieve a Maximum Modification or higher degree of scenic quality than adopted under the Forest Plan.

### **Alternative 3**

Units 109, 204, 205, 207, and 208 are partially visible in the middleground distance zone from the waters of Security Bay or Saginaw Bay. All units in this alternative have a Forest Plan VQO of Maximum Modification.

Unit 109 would be only slightly noticeable and would meet the Partial Retention VQO. Approximately 21 acres would be partially visible from the head of Security Bay.

Units 204, 205, 207, and 208 are located in the seen area of upper Saginaw Bay. Unit 204 would likely meet the Modification VQO with approximately 69 acres of partial harvest. Units 205 and 208 would meet the Maximum Modification VQO with approximately 39 and 69 acres of visible harvest respectively. Unit 207 would not be visible to most people visiting Saginaw Bay as it can only be seen from the extreme upper end of the bay in waters that are not usually navigable, and would meet a Partial Retention to Modification VQO.

The remaining units in this alternative are not visible from any Visual Priority Travel Routes and Use Area and meet a Maximum Modification or higher degree of scenic quality than required by the Forest Plan.

### **Alternative 4**

Units 101, 109, 111, 401, and 503 may be completely or partially visible in the middleground distance from the waters of Security Bay. The Modification to Maximum Modification VQOs would be achieved and would meet a slightly higher degree of scenic quality than required by the Forest Plan.

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Units 207, 208, 302, and 303, may be completely or partially visible in the middleground from Saginaw Bay. Unit 207 would not be visible to most people as it can only be seen from the extreme upper end of the bay in waters that are not usually navigable, and would meet a Partial Retention to Modification VQO. Units 302 and 303 would have approximately 60 acres of visible partial harvest, meeting the Modification VQO. And Unit 208 would meet the Maximum Modification VQO with approximately 60 acres of clearcut harvest visible.

The upper half of the 99-acre Unit 412 would become visible to travelers entering Rowan Bay at a point where the bay turns in a northerly direction. The reduced visibility of Unit 412 as a result of screening by foreground vegetation would reduce the contrast somewhat so the unit does not appear as a dominant feature in the landscape. As a result, the unit would meet a Modification to Maximum Modification VQO depending upon the angle and location of view.

Units 414 and 415 would harvest a combined total of 49 acres within the foreground viewing distance of the Kadake Creek Recreational River Corridor. Silvicultural treatment of 50 percent BA retention would meet the VQO of Partial Retention. The remainder of Units 414 and 415 located within the Timber Production LUD would achieve a Modification to Maximum Modification VQO as viewed from within the corridor.

The remaining units in this alternative are not visible from any Visual Priority Travel Route or Use Area and achieve a Maximum Modification or higher degree of scenic quality than required by the Forest Plan.

#### **Alternative 5**

All units in Alternative 5 are proposed for even-aged harvest by clearcut. Ten of the units are completely or partially visible from Visual Priority Travel Routes or Use Areas. Units 101, 109, 111, 401, and 503 are within the seen area of Security Bay and identical in effects to Alternative 4. The Modification to Maximum Modification VQOs would be achieved and would meet a slightly higher degree of scenic quality than required by the Forest Plan.

Units 204, 207, 208a, and 208b are located within the seen area of Saginaw Bay, and would meet the VQO of Maximum Modification.

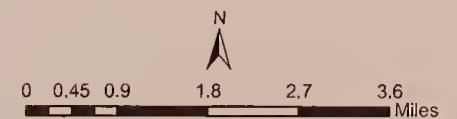


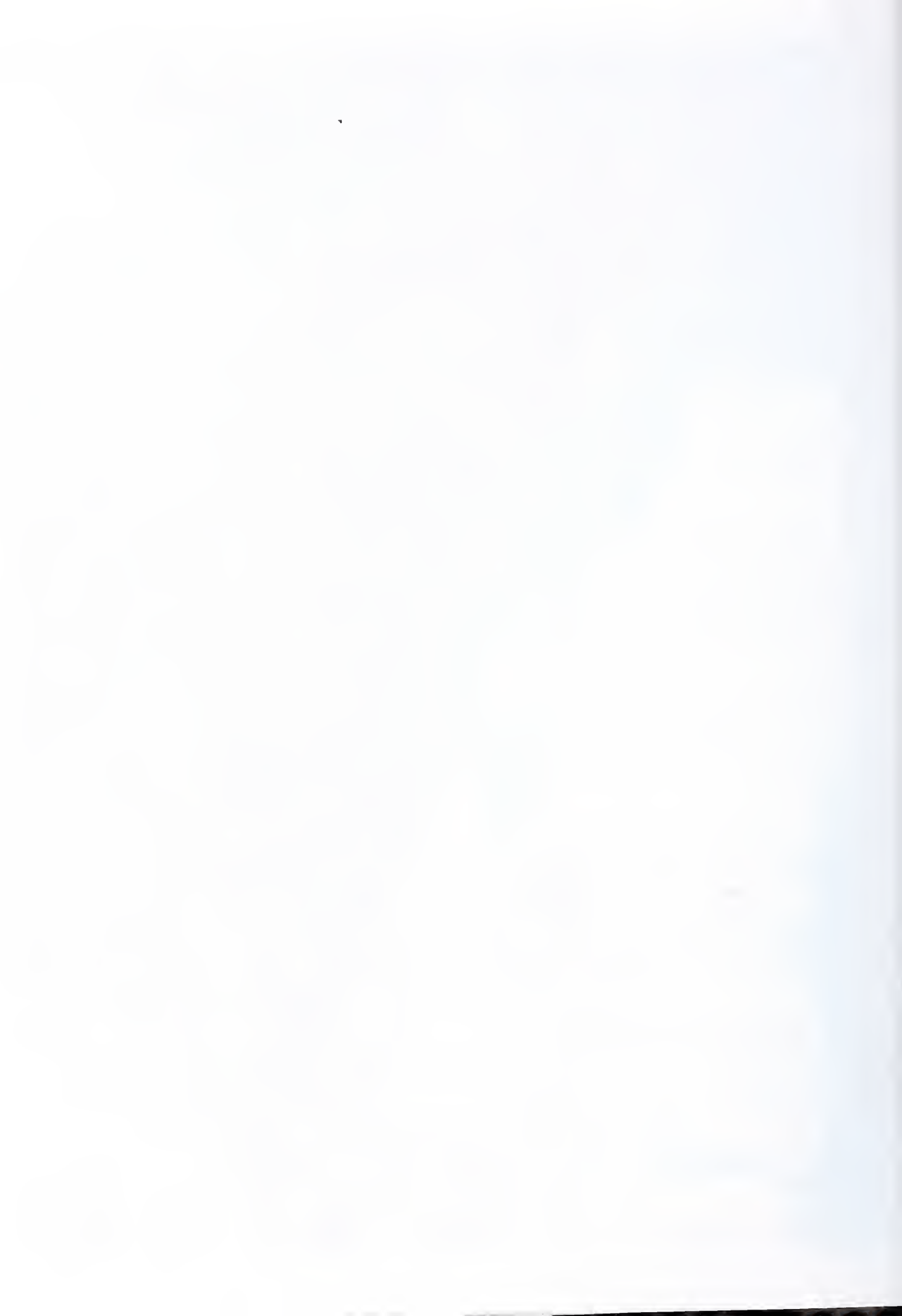


# Kuiu Timber Sale Figure 3-11 Adopted Visual Quality Objectives

## Legend

- Retention
- Partial Retention
- Modification
- Maximum Modification
- Non-National Forest
- Recreational River
- Managed Stands
- Unit Pool
- Lakes/Saltwater
- Project Area Boundary
- 500ft Contour Interval
- Stream Value Class I & II
- Existing Open Roads
- Kadake Bay Cabin





Unit 412 as seen from Rowan Bay would meet a VQO of Modification to Maximum Modification depending upon the angle and location of view as in Alternative 4.

The remaining units in this alternative are not visible from any Visual Priority Travel Route or Use Area and would meet a Maximum Modification or higher degree of scenic quality than required by the Forest Plan.

### **3.13.6 Cumulative Effects**

The Catalog of Events for Kuiu Island was referenced in determining cumulative effects. Cumulative effects consider the overall scenic effects expected as a result of past, present, and foreseeable future development. These effects include timber harvest, roads, borrow pits, associated construction activities, and existing effects of adjacent non-national forest lands. Previous development in the Project Area has been extensive, modifying the scenic environment from a natural condition to a condition where landscapes appear highly modified. The past development considered in this analysis and listed in the Kuiu Catalog of Events that contributes to scenery's cumulative effects are the Crane and Rowan Mountain Timber Sales, North and East Kuiu, and the APC Long Term Timber Sale Contract, 1981-86 and 1986-90 Operating Periods.

Viewshed is typically the spatial scale used to consider cumulative effects for scenery, however, for the purpose of this analysis Value Comparison Units (VCUs), which have similar boundaries, were used. Temporally, cumulative effects change due to the regrowth of vegetation, and after 30 years harvested areas are no longer considered to cumulatively impact scenery.

Implementation of any of the proposed alternatives would continue to modify the scenic environment. Cumulative effects of future conditions would continually change over time to a greater or lesser extent as vegetation grows or is removed, and, in general, ultimately present the appearance of the desired future condition outlined in the Forest Plan.

#### **3.13.6.1 Allowable Visual Disturbance**

Allowable Visual Disturbance expresses how much visual disturbance is acceptable for a given area during any given time period. The proposed management activities for the Project Area may occur adjacent to or near previously harvested locations. Even though individual harvest units may meet a particular Visual Quality Objective, cumulatively a greater impact may result.

Allowable visual disturbance is a means to express cumulative visual impact that has occurred while achieving the desired future condition of a particular landscape during the harvest rotation. During the



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effects analysis of the Forest Plan, allowable visual disturbance thresholds were modeled (Forest Plan FEIS Appendix B, Table B-6, p. B-18) to describe the expected visual condition for land use designations. It was assumed that up to 50 percent of a viewshed or VCU may be under development at any given time for areas within the Timber Production LUD; therefore, the Timber Production LUD falls under the Maximum Modification Visual Quality Objective.

**Table 3-74. Percentage of Allowable Visual Disturbance by VCU and Alternative**

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>VCU 399 (Saginaw)</b>	10%	11%	12%	12%	14%
<b>VCU 400 (Security)</b>	8%	8%	8%	9%	9%
<b>VCU 402 (Rowan)</b>	10%	10%	10%	10%	10%
<b>VCU 422 (Kadake)</b>	15%	15%	15%	16%	15%

The percentage of previously harvested areas within the VCUs currently range from 8 to 15 percent allowable visual disturbance. This amount of disturbance is well within the 50 percent threshold described the Forest Plan and represents a higher degree of scenic quality than expected for timber production areas. With the addition of the proposed alternatives, the cumulative effect on scenery also remains below the 50 percent allowable disturbance threshold.

## 3.14 Recreation

### 3.14.1 Introduction

The Kuiu Timber Sale Area is in the northern section of Kuiu Island. There are three bays within or beside the Project Area boundary: Security Bay, Saginaw Bay, and Kadake Bay. Not included in the Project Area boundary but potentially affected by the project is Rowan Bay where there is a LTF, evidence of a past logging camp, and a Forest Service administrative facility. Also outside the Project Area but potentially affected by the proposed actions is an existing recreation cabin located in Kadake Bay. These are the areas of analysis for this section.

Access to Kuiu Island is by boat or floatplane. Both Rowan Bay and Saginaw Bay have LTFs, either of which may be used to transfer logs from the Project Area to saltwater. The LTFs also provide access to the area road system for visitors arriving by boat to hunt or recreate in the area. These visitors may bring all terrain vehicles (ATVs) or street vehicles to use on the road system. The road system does not connect to any community or ferry terminal.

### 3.14.2 Recreation Opportunity Spectrum (ROS)

To describe, identify, and quantify recreation settings, the Forest Service uses the Recreation Opportunity Spectrum (ROS). The ROS categorizes areas by their activities, remoteness, access, and experiences in a spectrum of classes from Primitive to Urban. The Project Area has three of the seven ROS classes: Roaded Modified, Semi-primitive Motorized, and Semi-primitive Non-motorized (Table 3-75). The ROS classes are described in detail in the Recreation Resource Report found in the Kuiu Timber Sale planning record.

**Table 3-75. Existing Recreation Opportunity Spectrum (ROS) Classes within the Kuiu Timber Sale Area<sup>a</sup>**

ROS Class	Acres within Project Area	Percent of Project Area
Roaded Modified	38,837	85%
Semi-primitive Motorized	3,913	9%
Semi-primitive Non-motorized	2,996	6%
<b>Total Acres</b>	<b>45,746</b>	<b>100%</b>

<sup>a</sup> Does not include 356 acres of non-national forest system lands in the Project Area.

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**Table 3-76. Recreation Opportunity Spectrum (ROS) class acres in the Kuiu Timber Sale Area<sup>a</sup>**

ROS Class	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Roaded Modified</b>	38,837	38,837	38,858	38,900	38,900
<b>Semi-primitive Motorized</b>	3,913	3,913	3,913	3,913	3,913
<b>Semi-primitive Non-motorized</b>	2,996	2,996	2,975	2,933	2,933
<b>Total Acres</b>	<b>45,746</b>	<b>45,746</b>	<b>45,746</b>	<b>45,746</b>	<b>45,746</b>

<sup>a</sup> Does not include 356 acres of non-national forest lands within the Project Area.

Since the majority of Kuiu Island is undeveloped, it is primarily used for dispersed recreation activities. Viewing scenery and wildlife, boating, fishing, beachcombing, hiking and hunting are the primary dispersed recreation activities that take place.

#### 3.14.3 Recreation Places and Sites

Highly valued areas defined by accessibility, user preferences, and presences of certain amenities (scenery, wildlife viewing, and good fishing) are termed recreation places.

Recreation places are specific areas identified by the Forest Plan that are used for recreation activities. The ROS setting of a recreation place largely determines its attractiveness and utility. The Forest Plan direction for recreation places in the Modified Landscape and Scenic Viewshed LUDs is to maintain the existing ROS setting. The Forest Plan direction in the Timber Production LUD is to seek to minimize impacts to recreation places through scheduling and location of project activities. When approved activities nearby may result in a change to the ROS setting, the impacts should be minimized so that a Roaded Natural or other more natural ROS setting is maintained.

A recreation site is a specific site and/or facility occurring within a recreation place. Recreation sites generally refer to specific points like anchorages or developed facilities such as recreation cabins and trailheads.

The selection and identification of recreation places and sites was done by noting what characteristics or qualities of a site attract and influence visitor use.



The following discussion describes, by VCU, the recreation use and attractors in each general area near or in the Project Area. Within these areas there may be one or more recreation place.

#### **3.14.3.1 Saginaw Bay – VCU 399**

There are three recreation places within this VCU: the head of Saginaw Bay, Halleck Harbor, and the Cool/Ledge Lake area. Saginaw Bay itself is outside the Project Area, but an LTF on the south side of the bay (within the Project Area) provides access to the road system. Most of the activities in this VCU provide Semi-primitive Motorized experiences.

#### **3.14.3.2 Security Bay – VCU 400**

The two recreation places in this area include the head of the bay and the shoreline around the bay. Recreational use is generally water-oriented, and secure anchorages exist at numerous points along the bay's shoreline. While Security Bay is outside the Project Area, it is being analyzed because of its proximity to the Project Area.

#### **3.14.3.3 Rowan Bay – VCU 402**

The two recreation places in this VCU include the estuary at the head of Rowan Bay, and the anchorage on the south shoreline. A Log Transfer Facility (LTF) exists on the north shore of Rowan Bay. An adjacent dock provides access to the internal road system for boaters and floatplane passengers. There is also a large area that supported a major logging camp and sort yard located in the vicinity. Rowan Bay is outside of the Project Area boundary, but the LTF in Rowan Bay may be used to transport logs with this project, so it is being analyzed from a recreation perspective.

#### **3.14.3.4 Kadake Bay – VCU 421**

The three recreation places in this VCU include Kadake Bay, a portion of Kadake Creek, and Gil Harbor. All three are outside the Project Area boundary, but because of their proximity to the area and their important recreation values (fishing and black bear hunting), they are included in this analysis.

### **3.14.4 Outfitters and Guides**

Several outfitters and guides do business on Kuiu Island including the at north end where the Project Area is located. The two main categories for outfitters and guides are black bear hunting and sightseeing.

#### **3.14.4.1 Black Bear Hunting**

Black bear hunting on North Kuiu Island is an important activity for outfitters and guides. Since 2004 eight to ten outfitters and guides have had special use permits for this area. Actual Use Reports show the number of black bear hunts on northern Kuiu Island ranged from 59-69 during the 2004-2006 seasons. One hunt constitutes one client who

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spends any amount of time on National Forest land. Each client pays \$4,000-6,000 per hunt, so the economic benefits of outfitters and guides using North Kuiu are substantial.

Some outfitters and guides who black bear hunt on North Kuiu also take their clients sightseeing, freshwater fishing and hiking on National Forest lands.

While the outfitter/guide use for bear guiding on Kuiu remains well below the amount allocated in the 1997 Outfitter/Guide EA, that capacity was based on recreation experience, not on the capacity of the bear population to sustain hunting pressure. Other factors have limited the level of guided black bear hunting on North Kuiu. A decision in 2001 by the Alaska State Board of Game limited the annual non-resident harvest on Kuiu to 120 black bears per year. The Forest Service took complementary action by “freezing” the amount of use authorized in special use permits. No new guides have been authorized to operate on Kuiu since 2002 and no use increase of authorized guides from historical levels has occurred.

Black bear populations on Kuiu Island appear to be stable after ADF&G set harvest limits for nonresident hunters. There is no evidence that the black bear population on Kuiu Island is over-harvested at this time. However, the Forest Service and ADF&G agree that it would be prudent to use a conservative approach in managing black bear on Kuiu Island, and will cooperatively monitor the island’s harvest and population of black bear.

In 2000, 17 outfitters and guides held Special Use Permits to guide for bear hunting on northern Kuiu Island. The number has decreased since then to only 8 in the past 3 years (2005-2007). These businesses are generally based out of boats and their clients hunt the shorelines and estuaries. Four outfitters and guides have had permits for the Kuiu Island road system and use ATVs or vehicles to hunt farther inland. The number of hunts on the Kuiu road system decreased from 25 in 2004 to 13 in 2005 and to 8 in 2006.

Approximately three percent of successful hunters use vehicles to hunt black bear on Kuiu Island. This has ranged from 0 to 14 percent since the 1989 hunting season. Using boats and hunting from the beach are the most successful means for taking black bear on Kuiu Island (mean 84 percent, range 73 to 91 percent).

Although little is known about black bear populations in Southeast Alaska, the estimated densities occurring on Kuiu Island seem very high. Peacock (2004) estimates the population density on north Kuiu Island to be 1.5 bear/km<sup>2</sup>, which is one of the highest recorded bear densities in North America.

While numbers vary from year to year, the management objectives set by Alaska Department of Fish and Game (ADF&G) for black bear harvest in Game Management Unit 3 (GMU 3), which includes Kuiu Island, have been met or exceeded. The objectives include an average 18.5 inch skull size of harvested black bear, with males being 75 percent of the harvest. On Kuiu Island the average skull measurement is 18.6 inches with the harvest being 79 percent male.

#### **3.14.4.2 Sightseeing**

Guided sightseeing on north Kuiu Island includes small cruise ships and tour boats, as well as private boats and yachts. These boats often visit the unique fossil bluffs and limestone cliff areas in Halleck Harbor and Saginaw Bay. If the clients go ashore for hiking or fishing on National Forest Land, the operators are required to get a Special Use Permit for that use. There are several outfitter/guides that use Saginaw Bay for those activities.

A few outfitters and guides with special use permits for North Kuiu rely exclusively on sightseeing, freshwater fishing and hiking for their clients. Also, two kayak outfitter and guides have used the shoreline of North Kuiu Island for their trips.

### **3.14.5 Environmental Consequences**

#### **3.14.5.1 Direct and Indirect Effects to the ROS**

Very minor changes would occur to the ROS in any of the proposed alternatives. Less than one percent of the acres would change from a Semi-primitive Non-motorized setting to a Roaded Modified setting in Alternatives 3, 4, and 5. No change would occur in Alternatives 1 and 2 (Table 3-74).

**Alternatives 1 and 2** would have no effects to existing ROS.

**Alternative 3** would change 21 acres from a Semi-primitive Non-motorized setting to a Roaded Modified setting through the location of Unit 210. This alternative would not introduce roads or harvest into the Semi-primitive area, but the location of Unit 210 would change the conditions and experiences in this part of the Semi-primitive area.

**Alternatives 4 and 5** would change 63 acres of a Semi-primitive Non-motorized setting to Roaded Modified setting through the location of Units 210, 211, and 212. About a quarter acre of Unit 212 would actually fall into the existing Semi-primitive area. This overlap and the proximity of the other units would change the conditions and experiences in this part of the Semi-primitive area.

#### **3.14.5.2 Direct and Indirect Effects to Outfitters and Guides**

None of the alternatives propose timber harvest or road building within any recreation places. The effects to scenery are described in detail in the Scenery section. Other effects to the recreation places would be temporary (lasting during the duration of the logging activity) such as



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the use of the LTF site at either Rowan Bay or Saginaw Bay which would affect recreationists in those areas.

During timber harvest, log truck traffic and other traffic associated with the timber sale would increase and could negatively affect the few recreationists and the six outfitter/guides that currently use the road system.

Some currently open roads would be closed after the timber sale is complete. Alternatives 2 and 3 propose to close 7.8 and 8.0 miles respectively; Alternatives 4 and 5 propose to close 10.5 miles of currently open road. For all action alternatives, the longest length of road proposed for closure is Road 46096 (3.6 miles), which has road cracks and slumps and minor non-catastrophic failures. This road is expected to become undrivable in about five years. However, since current use of the roads is very low, closure of this road and others is not expected to significantly affect recreationists or the four black bear hunting outfitters and guides currently permitted to use the Kuiu road system.

## 3.14.6 Cumulative Effects

The Catalog of Events for Kuiu Island was referenced in determining cumulative effects. The area analyzed for cumulative effects includes the Project Area plus the larger area on north Kuiu Island that has been heavily harvested in the past. Recreation settings on north Kuiu Island have changed drastically since timber harvest activities began in the 1960s (Kuiu Catalog of Past Activities). The area now has numerous roads and timber in various age classes. Many of the original Primitive and Semi-primitive recreation settings have changed to more developed settings. People expect to see timber harvest in the area now. New harvest would add to the developed feel of the area, but would not be a big change from its current condition. The proposed activities for this project would not significantly change the existing recreation opportunities.

Past projects that have enhanced recreation on North Kuiu include the Kadake cabin, kayak portage trails and the Bay of Pillars shelter. These projects are not within the Project Area itself, but encourage people to come to North Kuiu for recreation. The proposed timber harvest would not affect these recreation opportunities.

The remaining unharvested units in the Crane and Rowan Mountain Timber Sales EIS could be harvested. Within the Project Area, there are two units on Road 6425 near Cool and Ledge Lakes, and four units on Road 6402 east of the head of Security Bay. Outside the Project Area, but nearby, there are several small units on an extension of Road 46041 north of Rowan Bay. The proposed activities would not significantly affect existing recreation, since roads and harvest units already modify the north Kuiu area. The nature of the current

recreation opportunities would remain the same. Outfitter and guides are concerned about maintaining the recreation experience for their hunts. The proposed timber harvest would add more harvest units to an already roaded and harvested area. It would not noticeably change their experience from the current condition.

One of the major recreation activities on north Kuiu Island is black bear hunting. The effects of continued logging on black bear are not well understood. Changes in habitat and road densities may affect black bear numbers within the areas of activity. Reductions to black bear populations are not expected from the implementation of any alternative.

The Petersburg Ranger District has developed the Kuiu Island Road Analysis, which includes Road Management Objectives (RMOs) for all the roads on Kuiu Island. These objectives describe the current condition and proposed future maintenance level for each road. The long-term plan for many of these roads is to put them in storage, which means they would be closed to motorized traffic. Specific dates have not been determined yet. Many of the roads planned for storage, however, already exclude motorized traffic because they have grown closed with alder. Roads in storage would still be accessible by foot. Closing roads that are currently drivable could affect those recreationists who drive the roads for hunting. This would include mostly black bear hunters and outfitter/guides that use the road system. At this time, there are relatively few hunters who drive the roads, so the effects would not be significant.

## **3.15 Socioeconomics**

### **3.15.1 Introduction**

Approximately 70,600 people live in towns, communities, and villages located on islands and coastal lands of Southeast Alaska. Federal lands comprise about 95 percent of Southeast Alaska, 80 percent within the Tongass National Forest. Southeast communities are within or adjacent to the Tongass and are largely dependent on the Forest to provide natural resources for commercial fishing, timber harvest, recreation, tourism, mining, and subsistence.

River and stream systems on the Tongass contribute to a healthy salmon fishery for commercial and sport fishing. About one third of the timber harvested in Southeast Alaska is from the Tongass.

### **3.15.2 Social and Economic Setting**

A summary of the community of Kake is provided below, and detailed information of all local communities can be found in the Socioeconomics and Subsistence Resource Reports available in the planning record. For a complete discussion of community descriptions and the regional economy, please see the Forest Plan EIS, Part 2, Chapter 3.

#### **3.15.2.1 Kake**

Kake is the nearest community to the Project Area and is most likely to be affected socially and economically by the project in terms of subsistence, recreation, tourism, and general local use of the area. Other nearby communities include Petersburg, Point Baker, Port Protection, and Wrangell. The information gathered for the community profiles came from the Alaska Department of Commerce Community and Economic Development web page (ADCCED 2004).

The potential impact to nearby communities with processing facilities that may utilize the timber will depend on many elements associated with the competitiveness and efficiency of individual operations. Such factors are dependent upon private business decisions as well as market conditions for forest products. The Forest Service cannot predict which firms will successfully bid for a timber sale, thus potential community benefits relating to jobs and incomes associated with a sale will not be predicted specifically, but in a regional summary.

Data collected at the census area level may not reflect specific community trends in Kake but is useful in subdividing the region into smaller study areas. Where it is possible, community-level data has been displayed.

Kake is a Tlingit village and was the first Alaska Native village to organize under federal law in the early 1900s. The Organized Village



of Kake (OVK), a federally recognized tribe, is located in the community and has a tribal membership of 480. Traditional customs are very important to the community. Kake residents are dependent upon subsistence opportunities as economic supplements. Subsistence is covered in Issue 2 - Deer Habitat and Subsistence Use in this chapter and in the Subsistence Resource report available in the Kuiu Timber Sale planning record.

The population in Kake grew steadily over the last century until 2000, when the population began to decline. In 1990 and 2000, the population of Kake was reportedly 700 and 710, respectively. By 2003 the population had fallen to 682, and by 2006 the population was estimated to be 598, which is a 16 percent decline in six years. The population of the community is nearly 75 percent American Indian (Alaska Native) with the remaining residents mostly White American.

In Kake, the city, school district, Organized Village of Kake (OVK), and Southeast Alaska Regional Health Consortium (SEARHC) are the largest employers. Approximately 32 percent of the employed population of Kake work for a government entity, about 60 percent are privately employed, and the remaining are sole proprietors. Fishing contributes considerably to the economy. Sixty-seven residents hold commercial fishing permits. The non-profit Gunnuk Creek Hatchery has assisted in sustaining the salmon fishery.

Kake's economy was hit hard after 2003 when two of their major employers, Kake Tribal Logging and Timber and Kake Foods, virtually eliminated their workforce. Kake Tribal reduced its number of jobs by 97 percent while Kake Foods reduced its employment by 90 percent. Kake has since been deemed a "distressed community" by the Denali Commission. According to the commission, a distressed community is one that meets the following criteria:

- Per capita market income not greater than 67 percent of the U.S. average; and
- Poverty rate at 150 percent of the U.S. average or greater; and
- Three-year unemployment rate at 150 percent of the U.S. average or greater; or
- Twice U.S. poverty rate and either (1) or (3) above.

Based on 2003 data, the Denali Commission estimates Kake's average market income as below the threshold level and estimates that more than 70 percent of residents aged 16 and over earn less than the threshold.

Recreation and tourism opportunities are increasing in some parts of the region but it appears some further development and infrastructure is needed to strengthen these sectors and increase higher wage

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employment. Kake is currently pursuing tourism income and opportunities, but has not experienced the increase in tourism that larger communities in the region have.

### 3.15.2.2 Other Communities

Point Baker and Port Protection are on the northwest end of Prince of Wales Island, approximately 40 miles southeast of the Project Area. According to a 2005 state demographic estimate, Point Baker had a population of 22 and Port Protection had a population of 54.

Petersburg is situated on the northwest shore of Mitkof Island at the north end of Wrangell Narrows, approximately 35 miles east of the Project Area. The 2005 population estimate for Petersburg was 3,155.

Wrangell is on the northern tip of Wrangell Island, approximately 60 miles southeast of the Project Area. The 2005 population estimate was 1,974. The community began as an important Tlingit village primarily because of its proximity to the Stikine River. Today timber, fishing, and fish processing dominate Wrangell's economy and tourism has been a growing economic sector in recent years.

Meyers Chuck is located on the Cleveland Peninsula approximately 80 miles to the southeast of Kuiu Island. Most of use is by commercial fishermen and is incidental in nature. The 1995 population was 35, and by 2005 the population had fallen to 15.

Residents of these communities may use Kuiu for some subsistence resources. Subsistence is covered in Issue 2 - Deer Habitat and Subsistence Use in this chapter and in the Subsistence Resource report available in the Kuiu Timber Sale planning record.

### 3.15.3 Effects to Economic Activity

#### 3.15.3.1 Outfitter and Guide Use

See the Recreation section in this chapter.

#### 3.15.3.2 Commercial Fishing

Local economies are largely based on commercial fishing and fish processing. Fishermen use some of the waters around the Project Area but are not specifically dependent on this area. Riparian standards and guidelines, Best Management Practices and estuary and beach fringe protection were developed and initiated to protect salmon populations, regardless of the alternative selected. Effects to the fish populations and anadromous fish habitat would not likely be noticeable. These effects are discussed in Issue 4- Cumulative Effects on Watersheds and Essential Fish Habitat sections in this chapter.

#### 3.15.3.3 Tourism, Recreation and Scenery

Tourism is a significant industry that continues to grow throughout Southeast Alaska and relies on several different resource bases. Some

tourism activities depend upon the wildness of Alaska in attracting and engaging visitors to participate in outdoor adventures. Other tourism activities cater to visitors who enjoy the scenery of Alaska while being provided the comforts associated with development. Currently, the waters around the Kuiu Timber Sale Area support some tourism activities in the form of outfitter and guides. Fishing, black bear hunting, and wildlife viewing are the main activities. The analysis of changes in recreation is discussed in the Recreation section of this chapter.

The Project Area is visible from public travel routes and use areas and the scenery is subject to change as a result of the proposed activities. See the Scenery section of this chapter for detailed information regarding scenic impacts.

### **3.15.4 Effects of the Alternatives**

#### **3.15.4.1 Direct and Indirect Effects**

Alternative 1, the No-Action alternative, would maintain the current level of opportunities for resource use. All action alternatives would cause changes to the current situation. These changes are described as increases or decreases in opportunities, benefits, or costs.

Many of the benefits and costs are short-term, lasting only as long as a proposed timber sale would be active. Wood products employment associated with the sale, temporary road development, noise, logging camp use, log transfer facility activity, and increased traffic are examples of short-term impacts. Landscape changes are effects that would remain after timber harvest is complete. The time frame of individual impacts should be considered when evaluating the impacts of each alternative and when looking at cumulative effects.

#### **3.15.4.2 Cumulative Effects**

Most socioeconomic issues are not quantifiable because they rely on individual perceptions and values. In general, a stable timber industry would benefit the local economies of Kake, Petersburg and Wrangell mainly through support businesses like grocery and fuel. The timber economics resource report estimates the direct and indirect employment levels likely to result from the action alternatives. The basic premise is that the higher the volume of timber available and sold, the more jobs and income would likely result. A sustainable timber industry would continue to provide economic stimulus.

Tourism and recreation are on the rise across southeast Alaska. Many seek ecosystem related activities such as fishing, hunting, wildlife viewing and other outdoor recreation activities. The Project Area and adjacent lands continue to be used for tourism related activities (Recreation Resource Report, Appendix B, Figure 1). Continued timber harvest and related activities impact ecosystems and affect the potential for wilderness experiences. The no action alternative would



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preserve passive values that include habitat preservation for posterity or local use.

Selection of any of the alternatives, regardless of the action, would not likely affect the major economic base, which is commercial fishing.

## **3.16 Heritage Resources**

### **3.16.1 Introduction**

Heritage resources include an array of historic and prehistoric cultural sites and traditional cultural properties. The National Historic Preservation Act (NHPA) sets forth Government policy and procedures regarding these "historic properties" -- that is, districts, sites, buildings, structures and objects included in or eligible for the National Register of Historic Places. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on such properties, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800).

The Section 106 review process seeks to consider historic preservation concerns with the needs of federal actions. Review occurs through consultation with the Alaska State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), Federally-recognized Tribal Governments, and other parties with an interest in the effects of the proposed action on historic properties, commencing at the early stages of project planning. One of the goals of consultation is to identify historic properties that potentially may be affected by the proposed action, assess potential effects and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. The Forest Service consulted with the Organized Village of Kake, the tribal group that is culturally affiliated with the Project Area.

To ensure that the procedural requirements of 36 CFR 800 were met, a heritage resource investigation of the project's Area of Potential Effect was conducted (Figure 3-12). In accordance with the Programmatic Agreement (2002) among the Forest Service Alaska Region, the ACHP, and the SHPO, the resource report was submitted under modified 36 CFR 800 regulations implementing Section 106 of the National Historic Preservation Act. The heritage resource survey did not result in the identification of any new sites, and made a determination of no historic properties affected. The Organized Village of Kake, the Petersburg Indian Association, Sealaska Corporation, and the Tlingit-Haida Central Council were provided copies of the Forest Service Heritage Resource Report for review and comment. We received no response regarding our report and recommendations from any of these groups.

### **3.16.2 Affected Environment**

According to oral tradition and various ethnographic accounts, the Tlingit are the dominant native group of Southeast Alaska. The Project Area lies within the traditional territory of the Kake Tlingit, who occupied the northern half of Kuiu Island and the western portion of Kupreanof Island, with some occupation along the mainland shore of Frederick Sound as well as parts of Baranof Island and Prince of

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Wales Island. Prehistoric archaeological site types common to the region include villages, seasonal camps, gardens, rock art sites, and both wood and stone fish traps and weirs. The earliest known archaeological site in Southeast Alaska is on Prince of Wales Island, where investigations suggest people have been living in the region for close to 10,000 years.

Trapping, fur farming, fishing, timber harvest, mineral exploration, and homesteading are some of the historic endeavors that have drawn people to Southeast Alaska and helped shape it into what it is today. Many of these activities are represented in the archaeological record in the form of historic period cabins, mines, fur farms, canneries, salteries, and culturally modified trees (CMTs).

### 3.16.2.1 Known and Reported Cultural Resources

Previous archaeological investigations have provided insight into some of the early human activity on Kuiu Island. Many village sites, prehistoric fish traps and weirs, midden sites, burials, pictographs, petroglyphs, rock shelters, fort sites, historic trappers' cabins, CMTs, and evidence of beach logging illustrate the wide array of cultural activity that has taken place on Kuiu Island. A review of the Heritage Program site files and atlases reveals 16 sites that were previously recorded within the Project Area, all of which are on the coastal terrain of Saginaw Bay or Security Bay and not within the APE. No activities associated with the proposed action have the potential to impact these sites.

### 3.16.3 Environmental Consequences

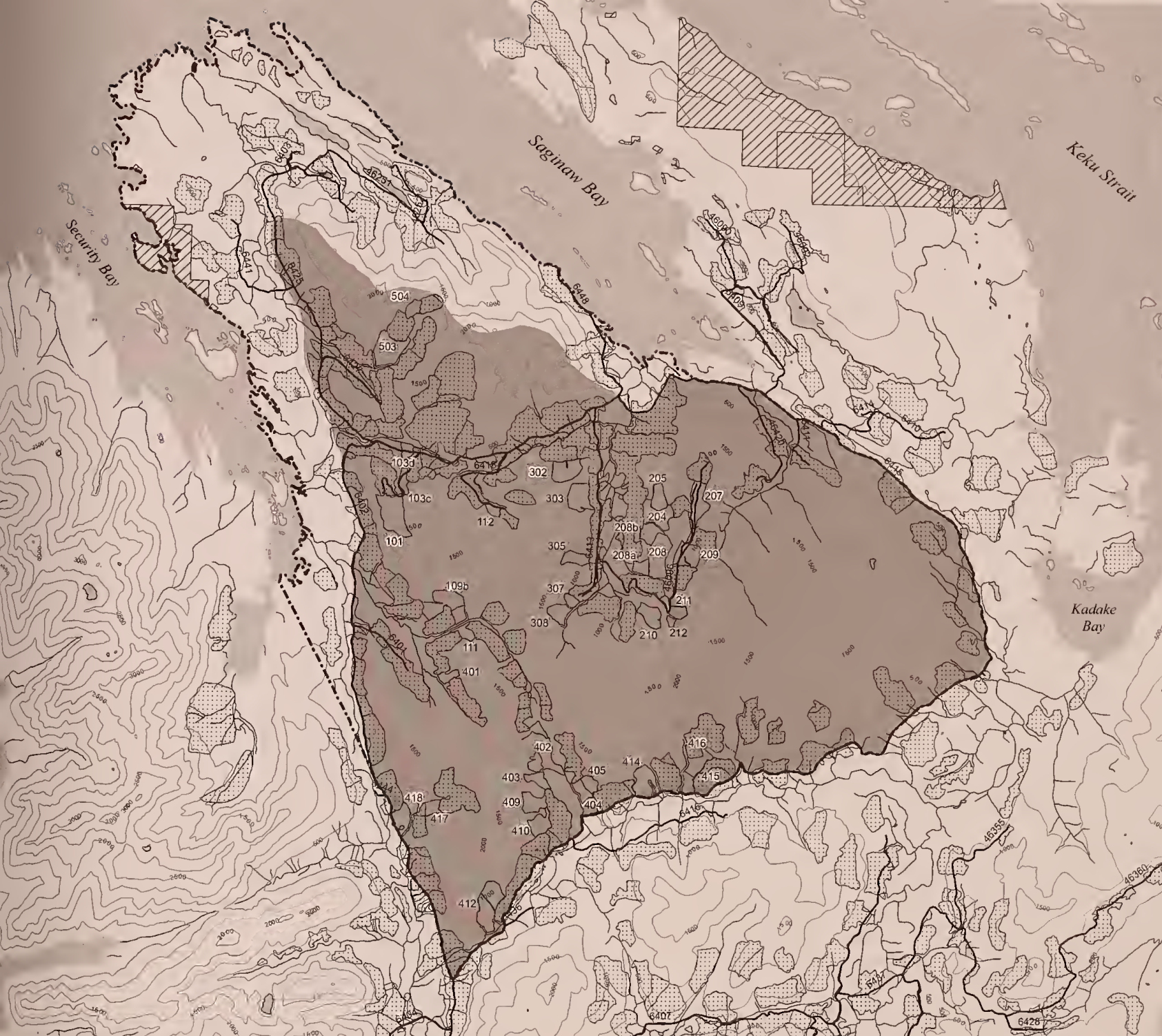
#### 3.16.3.1 Direct and Indirect Effects

Heritage resource surveys identified no new sites and no known historic properties would be affected with project implementation. None of the proposed action alternatives would have a direct or indirect effect upon known sites in the Project Area and no sites are located in the APE. All of the nearby archaeological sites and culturally modified trees are within a protected buffer established along the beach and estuary fringe defined in the Forest Plan Standards and Guidelines (Forest Plan p. 4-4). All of the planned timber harvest units and proposed roads are inland and on relatively steep terrain, within the low probability zone for cultural resources (Programmatic Agreement 2002). The use of existing LTFs at Rowan Bay and Saginaw Bay would not affect any known archaeological sites.





# Kuiu Timber Sale Figure 3-12 Area of Potential Effect for Heritage Resources



## Legend

- Area of Potential Effect
- Non-National Forest
- Managed Stands
- Lakes/Saltwater
- Unit Pool
- Project Area Boundary
- 500ft Contour Interval
- Stream Value Class I & II
- Existing Open Roads







**3.16.3.2 Cumulative Effects**

Current and past use of the Project Area centers around timber-related activities, hunting, and recreation. No known historic properties were affected by past activities that have occurred in the Project Area. Logging occurs inland while most of the recreation activities take place along the beach. Some of the existing logging roads allow inland hunter access as well. Over the years these activities have had little known effect on historic properties. This trend would likely continue unless new uses develop. Future expanded use of the beach and estuary fringe could eventually affect historic properties, but would not be a result of any of the project alternatives.

### **3.17 Non-National Forest System Lands and Uses**

Approximately 45,746 acres of the land within the Kuiu Timber Sale Area are National Forest System land. There are two acres of private land, seven acres of BLM land, and 347 acres of State of Alaska land within the Project Area boundary. There would be no effects to other land owners as a result of this project.

A float house in Saginaw Bay has a special use permit for a waterline.

There is one water line permit issued for water use from National Forest lands within the Project Area.

## **3.18 Findings and Disclosures**

### **3.18.1 National Forest Management Act**

#### **3.18.1.1 Tongass National Forest Land and Resource Management Plan**

All project alternatives fully comply with the Tongass Land and Resource Management Plan (1997, as amended). This project incorporates all applicable Forest Plan Forest-wide standards and guidelines and management area prescriptions as they apply to the Kuiu Timber Sale Area, and complies with Forest Plan goals and objectives. All required interagency review and coordination has been accomplished.

#### **3.18.1.2 R10 Supplement 2400-2002-1**

The Kuiu project fully complies with Alaska Region Supplement 2400-2002-1 to Forest Service Manual 2400. This supplement became effective on May 7, 2002, replacing the Alaska Regional Guide, which was withdrawn on April 16, 2002. Specifically, the Supplement provides direction for the management standards and guidelines for: appropriate harvest cutting methods; forest type standards; maximum size of created openings (a requirement of the National Forest Management Act, discussed below); dispersal and size variation of tree openings; management intensity; utilization standards; sale administration; project monitoring; and competitive bidding and small business.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for analysis of the Kuiu Timber Sale Area ensures compliance at the project level.

#### **3.18.1.3 Even-aged management as the Optimal Method of Harvesting**

The Forest Plan gives guidance on when to use even-aged management. Clearcutting (an even-aged harvest method) is used in this project to preclude or minimize mistletoe infestation, yellow-cedar decline, logging damage, windthrow, or other factors affecting forest health. Specific information for use of this prescription is shown in the silvicultural prescriptions, which are filed in the planning record. Where used, this prescription has been deemed optimal related to site-specific considerations as described above.

The National Forest Management Act limits the size of even-aged management harvested openings that may be created based on the forest type. For the coastal Alaska western hemlock/Sitka spruce forest type, the maximum created even-aged management opening size allowed is 100 acres. No proposed even-aged management harvest

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units in the Kuiu Timber Sale Area would result in openings greater than 100 acres. During layout of the unit, if changes are made to the boundary a change analysis must be done. The change analysis includes mapping and documenting the actual layout and rationale for those changes. No change that may lead to units with even-aged opening sizes over 100 acres would be approved.

## 3.18.2 Roads Rule

### 3.18.2.1 Forest Service Transportation; Final Administrative Policy

The Tongass National Forest has prepared the Kuiu Timber Sale Final EIS to be consistent with the Forest Service Transportation; Final Administrative Policy (Roads Rule).

## 3.18.3 Endangered Species Act

None of the action alternatives are anticipated to have a direct, indirect, or cumulative effect on any threatened or endangered species in the Kuiu Timber Sale Area or elsewhere. The National Marine Fisheries Service and the U.S. Fish and Wildlife Service have been consulted. No terrestrial threatened or endangered species are known to occur within the Kuiu Timber Sale Area. A Biological Evaluation is included in the planning record.

## 3.18.4 Bald Eagle Protection Act

Management activities are restricted within 330 feet of an eagle nest site by a Memorandum of Understanding (MOU) between the Forest Service and the U.S. Fish and Wildlife Service. None of the action alternatives is anticipated to have a significant direct, indirect, or cumulative effect on any bald eagle habitat. If the nest at the Rowan Bay LTF is active or any other nests are found that may be affected, the MOU and Forest Plan Standards and Guidelines would be followed.

## 3.18.5 Tongass Timber Reform Act

Harvest units were designed and located to maintain a minimum 100-foot buffer zone for all Class I streams and Class II streams that flow directly into Class I streams as required in Section 103 of the TTRA. As discussed in Appendix B, the actual widths of these buffer strips are often greater than the 100-foot minimum. The design and implementation direction incorporates Best Management Practices (BMPs) for the protection of all stream classes. If an action alternative is selected, the timber from this proposed project would provide part of the timber supply to the Tongass National Forest's program to seek to meet market demand.

## 3.18.6 National Historic Preservation Act

Heritage resource surveys of various intensities have been conducted in the Kuiu Timber Sale Area, following inventory protocols approved by the Alaska State Historic Preservation Officer. These surveys include background and existing literature searches and fieldwork complete with subsurface testing. Native communities have been contacted, and public comment encouraged. During analysis for this project, the Organized Village of Kake, the tribal group culturally



affiliated with the Project Area, was consulted regarding known or suspected heritage resources in or near the Project Area. The State Historic Preservation Officer has been consulted.

### **3.18.7 Federal Cave Resource Protection Act of 1988**

Forest Plan Karst and Caves Standards and Guidelines are applied to areas known or suspected to contain karst resources. Within the Project Area there are 6,624 acres of carbonate bedrock. No proposed timber harvest, road construction, or quarry development would occur on these areas or along the drainages which flow to them. Therefore, the action alternatives are not expected to affect any significant karst resources.

### **3.18.8 Alaska National Interest Lands Conservation Act (ANILCA)**

A subsistence evaluation was conducted for the alternatives considered in detail, in accordance with ANILCA Section 810. The evaluations in the Subsistence section of this chapter on abundance and/or distribution, access and competition for harvested resources in the Kuiu Timber Sale Area, indicate that there would not be a significant possibility of a significant restriction to the customary and traditional subsistence uses of wildlife, fish and shellfish, marine mammals, other foods, or timber resources as a result of this project. However, the Forest Plan addressed the long-term consequences on subsistence and concluded that there may be a significant possibility of a significant restriction to subsistence use of deer in the future due to the combined potential effects of projects implementing the Forest Plan and the predicted human population growth on the abundance and distribution of deer and on competition for deer. Subsistence hearings were held during the 45-day public comment period for the EIS. The first hearing was in Petersburg on March 16, 2006, in which three people testified, and the second hearing was in Kake on March 21, 2006 in which one person testified. The hearing testimonies are in the planning record.

### **3.18.9 Magnuson-Stevens Fishery Conservation Act of 1996**

The Magnuson-Stevens Fishery Conservation Act (1996) requires that all federal agencies consult with NMFS when any project "may adversely affect" essential fish habitat. The Forest Service's position is that harvesting timber near Class I streams and wetlands, and the use of the Rowan Bay or Saginaw Bay LTFs may have an adverse affect on Essential Fish Habitat. However, by following the standards and guidelines in the Forest Plan and implementing the Best Management Practices (BMPs), the effects on EFH would be minimized.

According to the agreement between the National Marine Fisheries Service and the USDA Forest Service dated August 25, 2000, this Final EIS includes the following:

- A description of the proposed action
- An analysis of individual and cumulative effects of the proposed action on the essential fish habitat, the managed species, and

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associated species such as major prey species, including affected life histories

- The Forest Service's views regarding effects on essential fish habitat
- A discussion of proposed mitigation, if applicable

A copy of the Draft EIS, which included the above assessment, was sent to the National Marine Fisheries Service for review. NMFS reviewed the Draft EIS and concurred in a letter dated March 20, 2006 with the Forest Service's determination that "the Kuiu Timber Sale may adversely affect Essential Fish Habitat" with conservation recommendations (see the NMFS comment letter and the Forest Service response in Appendix C).

## 3.18.10 Clean Water Act

Congress intended the Clean Water Act of 1972 (Public Law 92-500) as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) to protect and improve the quality of water resources and maintain their beneficial uses. Section 313 of the Clean Water Act and Executive Order 12088 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. Agencies must be consistent with requirements that apply to "any governmental entity" or private person. Compliance is to be in line with "all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution."

The Clean Water Act (Sections 208 and 319) recognized the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

The Forest Service must apply Best Management Practices that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, the State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FSH 2509.22,

October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the Tongass Land and Resource Management Plan.

A discharge of dredge or fill material from normal silviculture activities, such as harvesting for the production of forest products, is exempt from Section 404 permitting requirements in waters of the United States, including wetlands (404(f)(1)(A)). Forest roads qualify for this exemption only if they are constructed and maintained in accordance with Best Management Practices to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404)(f)(1)(E). The BMPs that must be followed are specified in 33 CFR 323.4(a). These specific BMPs have been incorporated into the Forest Service's Soil and Water Conservation Handbook under BMP 12.5.

The design of harvest units and proposed roads for this project are in accordance with standards and guidelines, and direction contained in the Forest Plan, Best Management Practices and applicable Forest Service manual and handbook direction. The Unit Cards in Appendix B contain specific practices prescribed to prevent or reduce non-point sediment sources. Monitoring and evaluation of the implementation and effectiveness of Forest Plan standards and guidelines and Best Management Practices would occur. Project activities are expected to meet all applicable State Water Quality Standards.

All roads, landings, and rock pits for this project would be constructed in accordance with Best Management Practices listed in 33 CFR 323.4(a). Site specific BMPs are listed on the Unit Cards in Appendix B. All roads, landings and rock pits would be designed to minimum standards to accommodate timber harvesting and silvicultural activities.

## **3.18.11 Clean Air Act**

Emissions expected from implementation of any of the action alternatives would be of short duration and are not expected to exceed State of Alaska Ambient Air Quality Standards (Alaska Administrative Code, Title 18, Chapter 50).

## **3.18.12 Coastal Zone Management Act and the Alaska Coastal Zone Management Program (ACMP)**

The Coastal Zone Management Act of 1972 (CZMA), while specifically excluding federal lands from the coastal zone, requires that a federal agency's activities be consistent with the enforceable standards of a state's coastal management program to the maximum extent feasible when the agency's activities affect the coastal zone. The State of Alaska developed the Alaska Coastal Management Plan (ACMP) in 1977 to evaluate any projects within the coastal zone.

The enforceable standards for timber harvest activities are found in the Alaska Forest Resource and Practices Act of 1993. The standards and guidelines for timber management activities in the Kuiu Timber Sale



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Area meet or exceed the standards in the State Forest Resources and Practices Act.

A Memorandum of Understanding specifies ACMP review procedures between the Forest Service and the State of Alaska. The State agencies involved are the Department of Fish and Game, the Department of Natural Resources, and the Department of Environmental Conservation. This memorandum serves to describe the process and expedite the review of whether a proposed project is consistent with the Alaska Coastal Management Program.

The Forest Service developed the Proposed Action and alternatives to the Proposed Action to be consistent, to the maximum extent feasible, with the enforceable policies of approved State management programs. The Forest Service has determined that all the alternatives for the Kuiu Timber Sale Area are consistent, to the maximum extent feasible, with the Alaska Coastal Management Program, as outlined in the Memorandum of Understanding.

The formal ACMP consistency review process for this project was initiated upon publication of the Draft EIS. The Alaska Department of Natural Resources Office of Project Management and Permitting coordinated a review of the Draft EIS and responded with a letter dated April 26, 2006 in which they concurred with the determination submitted by the Forest Service that “the project is consistent with ACMP and affected coastal district’s enforceable policies, to the maximum extent practicable. (See the NMFS comment letter and the Forest Service response in Appendix C).

### **3.18.13 Alaska Forest Resources and Practices Act**

The Alaska Forest Resources and Practices Act (1993) affects National Forest management through its relationship to the ACMP and the CZMA.

This Act is the standard used for evaluating timber harvest activities on federal lands for purposes of determining consistency to the maximum extent practicable with the ACMP. The Act recognizes that consistency is attainable for timber harvest on federal land using procedures different from those required by the Act or its implementing regulations.

### **3.18.14 Executive Order 11593**

Executive Order 11593 directs federal agencies to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. The work accomplished in accordance with Section 106 of the National Historic Preservation Act for the Kuiu Timber Sale Area meets the intent of this Executive Order.

The Heritage Resource Report in the planning record discusses the cultural environment of the area and addresses the Forest Service’s responsibilities according to historic preservation laws and regulations.



There are no known historic properties (cultural resources) within the area of potential effect. Native traditional values were considered, particularly those associated with subsistence use of the Project Area. Our analysis shows that native populations are not likely to be disproportionately impacted under any alternative.

### **3.18.15 Executive Order 11988**

Executive Order 11988 directs federal agencies to take action to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. A floodplain is defined as the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum that area subject to a one percent or greater chance of flooding in any given year.

Forest Plan standards and guidelines for riparian areas exclude most commercial timber harvesting from floodplains. Roads may be constructed in or through floodplains subject to the design requirements of Best Management Practices. Effects on floodplains from project activities have been avoided or minimized as much as possible.

### **3.18.16 Executive Order 11990**

Executive Order 11990 requires federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the destruction or modification of wetlands.

This project avoids impacting wetlands whenever practicable, but it is not feasible to avoid all wetland areas. Effects would be minimized by avoiding the use of wetlands as sites for overburden disposal, avoiding temporary road construction through wetlands whenever practicable, and by decommissioning new temporary roads after timber harvest. Implementation of BMPs, minimizing ditching, and providing adequate cross drainage would also help minimize the amount of wetlands affected.

In certain instances, crossing a wetland area can reduce the overall environmental impacts of a particular road because it facilitates avoidance of steep slopes and alignment of roads perpendicular to stream crossings. The Kuiu Timber Sale Area action alternatives propose up to 2.8 miles of temporary road construction across wetlands.

To reduce any road impacts to the hydrology at these sites, frequent road cross-drains would be constructed. To avoid artificial interception of water by roads, free-draining, coarse-textured rock would be used in road foundations, and installation of an adequate size and number of culverts would be required. Drainage structures would be removed on all temporary roads.

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## 3.18.17 Executive Order 12898

As required by law Executive Order 12898, all federal actions consider potentially disproportionate effects on minority or low-income communities. Where possible, measures should be taken to avoid impact to these communities or mitigate the adverse effects. Potential impacts or changes to low-income or minority communities in the Project Area, due to the proposed action, were considered.

Kake, though not within the Project Area, is nearby, and its residents have a long history of using the Project Area. Kake's population is about 75 percent Native and has been considered in the analysis of the proposed alternatives for disproportionate impacts. Several public meetings were held in Kake to assist people in understanding the alternatives and how issues were addressed. Some of the concerns voiced were that the declining economy of Kake has increased the community's reliance on subsistence and they are concerned that the Kuiu Timber Sale may reduce the availability of deer and salmon on and around Kuiu Island. The proposed project would not worsen the economy nor would it reduce the availability of subsistence deer or salmon (see the Issue 2 – Deer Habitat and Subsistence Use section in this chapter).

Implementation of the action alternatives for the Kuiu Timber Sale Area would not cause adverse health, social, or environmental effects that disproportionately impact minority and low-income populations. See also the ANILCA Section 810 findings.

## 3.18.18 Executive Order 12962

Executive Order 12962 directs Federal agencies to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities nationwide. Section 1 of the Executive Order is most pertinent to the Kuiu Timber Sale Area. Section 1 directs Federal agencies to evaluate effects on aquatic ecosystems and recreational fisheries, develop and encourage partnerships, promote restoration, provide access, and promote awareness of opportunities for recreational fishery resources.

The effects of this project on freshwater and marine resources were evaluated during the analysis. With the application of Forest Plan standards and guidelines, including those for riparian areas, no significant adverse effects to freshwater or marine resources are expected to occur.

Partnerships continue to be used to leverage federal project funds to address water quality concerns in areas of the Tongass National Forest, although none have been proposed for recreational fisheries in conjunction with this project.

### **3.18.19 Executive Order 13007**

Executive Order 13007 directs federal agencies to accommodate access to and ceremonial use of American Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. There are no known sacred Indian sites in the Kuiu Timber Sale Area. Consultation with local federally recognized tribes, including the Organized Village of Kake, Petersburg Indian Association, Tlingit/Haida Central Council, and Sealaska Corporation occurred during the analysis of this project.

### **3.18.20 Executive Order 13186**

Executive Order 13186 directs federal agencies to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. The sections on Wildlife and Threatened and Endangered Species in this chapter provide information on anticipated effects to selected bird species in the Project Area. None of the proposed activities are expected to have a measurable negative effect on migratory bird populations, although individuals or small groups and their nests may be affected.

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# **Chapter 4**

## **References and Lists**

## Chapter 4

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# Glossary

## **Adfluvial fish**

Species or populations of fish that do not go to sea, but live in lakes, and enter streams to spawn.

## **Adopted VQO**

The VQO to be achieved as a result of management direction identified in the approved Forest Plan. Adopted VQOs represent the visual resource objective for the planning period, normally 10 years. (FSH 2309.22, R-10 Landscape Management Handbook.)

## **Alaska Heritage Resource Survey (AHRS)**

The official list of cultural resources in the State of Alaska, maintained by the Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation.

## **Alaska National Interest Lands Conservation Act (ANILCA)**

The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551. Passed by Congress in 1980, this legislation designated 14 National Forest wilderness areas in Southeast Alaska. Section 810 requires evaluations of subsistence impacts before changing the use of these lands.

## **All-terrain Vehicle (ATV)**

A motorized four-wheeled vehicle less than 40 inches wide that is restricted by law from operating on public roads for general motor vehicle traffic.

## **Allowable Sale Quantity (ASQ)**

The maximum quantity of timber that may be sold each decade from suitable lands on the Tongass National Forest as identified from the Forest Plan. A ceiling, not a requirement.

## **Alluvial Fan**

A fan-shaped landform comprised of alluvium deposited at the mouth of a steep valley, canyon, or ravine.

## **Alluvium**

Mineral material such as boulders, cobbles, gravel, sand, silt and clay transported or deposited by flowing water.

## **Alpine/subalpine habitat**

Terrain located at elevations too high to support tree growth, such as on mountain peaks or ridges, generally above 1,500 feet in elevation in southeast Alaska.

## **Anadromous Fish**

Fish (such as salmon and steelhead) that spend part of their lives in fresh water and part of their lives in salt water. Anadromous fish ascend from the sea to spawn in freshwater streams.

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### **Aquifer**

A unit of rock or gravel that stores and transmits enough water to be hydrologically significant.

### **Background**

The distant part of a viewed landscape, located from three or five miles to infinity from the viewer.

### **Bark lechates**

Soluble organic compounds released into water from bark. Lechates cause the water to have a yellow to brown color.

### **Basal Area**

Total cross-sectional area of a tree or a stand of trees. This is measured at breast height and can be expressed in either square feet per acre or square meters per hectare.

### **Beach Fringe**

The area, typically forested, that is inland from saltwater shorelines.

### **Best Management Practices (BMPs)**

Practices specified in the Soil and Water Conservation Handbook (FSH 2509.22), and used during the planning, design, and implementation of timber sale projects, for the protection of water quality from non-point source pollution in accordance with the Clean Water Act.

### **Biogeographic Provinces**

Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province.

### **Biodiversity**

The variability among living organisms, including the variability within and between species, and within and between ecosystems.

### **Biological Assessment**

A “biological evaluation” conducted for major Federal construction projects requiring an environmental impact statement, in accordance with legal requirements under section 7 of the Endangered Species Act (16 U.S.C. 1536(c)). The purpose of the assessment and resulting document is to determine whether the proposed action is likely to affect a species that has been listed or proposed as an endangered or threatened species.

### **Biological Evaluation**

A documented Forest Service review of Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any species that has been listed or proposed as threatened, endangered, or sensitive.



**Biological Opinion**

An official report by the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) issued in response to a formal Forest Service request for consultation or conference. It states whether an action is likely to result in jeopardy to a species or adverse modification of its critical habitat.

**Board foot**

A unit of timber measurement equaling the amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide.

**Buffer**

An area of undisturbed or lightly disturbed forest reserved to isolate activity areas from sensitive areas.

**Carrying Capacity**

The estimated maximum number of individuals within a wildlife species that can be sustained over the long-term within a specified area. Carrying capacity is often used interchangeably with the term habitat capability.

**Channel Type**

A means of defining stream sections based on landform relief, geology, and channel characteristics such as width, gradient, and incision. For descriptions, see "Channel Type Field Guide," Forest Service publication R10-MB-6.

**Clearcut**

Harvesting method in which all trees are cleared in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, strip, or stand large enough to be mapped or recorded as a separate age class in planning.

**Climax Plant Community**

An assemblage of plants and that is relatively stable over time and which represents the late stages of succession under the current climate and soil conditions.

**Closed Roads**

Roads that have been placed in Maintenance Level 1 and are not open to motorized vehicles, although they may be accessible to non-motorized users. Road drainage structures may or may not be removed.

**Coarse Canopy Old-growth forest**

Old-growth forest that has lower crown density (number of trees) and non-uniform crown sizes and heights, including large crowns and many canopy gaps. Coarse canopies are usually found on aspects where the forest is protected from winds that result in catastrophic blowdown events.

**Colluvium**

Mineral material that is weathered in place or transported as a result of gravity.

**Connectivity**

A measure of the extent that forest areas between or outside habitat reserves provide wildlife habitat for breeding, feeding, dispersal, and movement.

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## **Cubic Foot**

A cube of wood with 1-foot sides. The cubic foot volume is a measure of the total sound wood in a tree and is a more accurate measure of wood volume than board foot.

## **Culturally Modified Tree (CMT)**

Trees that have been altered by human use, usually for the exploitation of bark and wood products.

## **Cumulative Effects**

The impacts on the environment resulting from the addition of the incremental impacts of past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions occurring over time.

## **Decommissioning**

Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703).

## **Deer Winter Habitat**

Locations that provide food and shelter for Sitka Black-tailed deer under moderately severe to severe winter conditions. Usually associated with high volume old-growth stands at low elevation and with south aspects.

## **Designated Road**

A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to CFR 212.51 on a motor vehicle use map (36 CFR 212.1).

## **Desired Future Condition**

A statement of the ultimate goal for resources and uses of an area.

## **Developed Recreation**

Recreation that requires facilities that, in turn, result in concentrated use of an area, such as campgrounds and picnic areas. Facilities in these areas might include roads, parking lots, picnic tables, toilets, drinking water, and buildings. See also Dispersed Recreation.

## **Diameter at Breast Height (DBH)**

The diameter of a standing tree at a point four feet, six inches from ground level.

## **Direct Employment**

The jobs that are immediately associated with a given activity.

## **Dispersed Recreation**

Recreational activities that are not confined to a specific place and are generally outside developed recreation sites. This includes activities such as scenic driving, hiking, backpacking, hunting, fishing, snowmobiling, cross-

country skiing, and recreation in primitive environments. See also Developed Recreation.

## **Distance Zones**

Areas of landscapes visible from priority travel routes and use areas categorized by distance criteria. (Foreground: 0 to ¼- ½ mile, Middleground: ¼ - ½ to 3-5 miles, or Background: greater than 3-5 miles). Used as a frame of reference in which to discuss landscape characteristics and management activities.

## **Ecological Subsections**

Eighty-five terrestrial ecosystems mapped and described for Southeast Alaska and adjoining areas of Canada in Nowacki et al. 2001. These mid-sized terrestrial ecosystems (10-1,000 mi<sup>2</sup>) embody similar ecological characteristics (e.g., landforms, streams, vegetation, soils, and wetlands) and provide a practical basis for ecosystem management, planning, and research.

## **Endangered Species**

Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species are identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

## **Endemic**

Peculiar to a particular locality; indigenous.

## **Estuary**

A landform characterized by the presence of, and the mixing of fresh water and salt water at the mouth of a stream, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.

## **Even-aged Management**

The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees forming the main canopy level of a stand usually does not exceed 20 percent of the age of the stand at harvest rotation age. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

## **Fluvial**

Of, or pertaining to, streams and rivers.

## **Forbs**

A category of herbaceous plants that are not included in the grass, shrub or tree categories; generally smaller flowering plants.

## **Foreground**

A term used to describe the area immediately adjacent to a viewer, typically located less than ¼ mile in distance.

## **Forest Land**

Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

## 4 References and Lists

### Forest Plan

Source of management direction for an individual Forest specifying activity and output levels for a period of 10-15 years. Management direction in the plan is based on issues identified at the time of the plan's development.

### Forest Road or Trail

A road or trail, wholly or partly within or adjacent to and serving the National Forest System, that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

### Forest-wide Standards and Guidelines

A set of rules and guidance that directs management activities and establishes the environmental quality, natural renewable and depletable resource requirements, conservation potential, and mitigation measures that apply to several land use designations.

### Gap Phase Dynamics

The processes by which the death of one or a few overstory trees acts like a small minor disturbance and permits a small, single-even-aged stand to grow from existing vegetation or seed germination.

### Geographic Information System (GIS)

A computerized map database that is used to store and evaluate site-specific information.

### Habitat

The sum total of environmental conditions of a specific place that is occupied by an organism, population, or community of plants or animals.

### Habitat Capability

Estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area. Habitat capability is often used interchangeably with the term carrying capacity.

### Habitat Suitability Index (HSI)

A measure of the capability of the habitat to support specific wildlife, based on a variety of environmental factors such as slope, elevation, aspect, and forest type.

### Heritage Resources

The prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. The term includes artifacts, records, and remains that are related to and located within such properties.



**High Hazard Soil**

Soil that is prone to mass movement. Soil type, geologic bedding, and slope angle are factors considered when establishing which sites are high hazard.

**Hydric Soils**

Soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

**Hydrologic Recovery**

A return to natural conditions of water collection, storage, and discharge.

**Indirect Employment**

The jobs in service industries that are associated with or support a given activity.

**Interdisciplinary Team (IDT)**

A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem or task.

**Intermediate Stand Treatment**

A stand management treatment that manipulates stand growth, composition, structure, or tree quality. Intermediate treatments include thinning, pruning, release, salvage, and sanitation cutting. These stand treatments do not attempt to obtain new tree regeneration. Some treatments such as salvage cutting or commercial thinning result in the harvest of forest products.

**Inventoried Roadless Areas**

National Forest System lands identified as undeveloped areas typically exceeding 5,000 acres that met the minimum criteria for wilderness consideration under the Wilderness Act and that were inventoried during the Forest Service's Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning. These areas are identified by the Roadless Conservation Area Rule.

**Irretrievable Commitments**

Loss of production or use of renewable natural resources for a period of time. The production or use lost is irretrievable, but not irreversible.

**Irreversible Commitments**

Decisions causing changes that cannot be reversed. Often applies to nonrenewable resources such as minerals and cultural resources.

**Karst**

A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed, surface drainage that are sinkholes, collapsed channels, or caves.

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### **Land Use Designation (LUD)**

A defined area of land, identified by the Forest Plan, to which specific management direction is applied.

### **Large Woody Debris (LWD)**

Any large piece of relatively stable woody material having a least diameter of greater than 10 centimeters and length greater than one meter that intrudes into the stream channel.

### **Log Transfer Facility (LTF)**

The site and structures which are used for moving logs and timber products from land-based transportation forms to water-based transportation forms.

### **Low-productive Forest Land**

Forested land that does not support enough timber volume to meet the criteria for productive forest land.

### **Management Indicator Species (MIS)**

Vertebrate or invertebrate wildlife species whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements. The National Forest Management Act regulations prescribe the use of management indicator species.

### **Mass Movement**

General term for a variety of processes by which large masses of soil and rock material are moved down slope by gravity either slowly or quickly. Mass movement is often used interchangeably with the term landslide.

### **Mass Movement Index (MMI)**

Rating used to group soil map units that have similar properties with respect to the stability of natural slopes.

### **Middleground**

The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape. The area is located from ¼ mile to 3-5 miles from the viewer.

### **Mitigation**

Measure designed to counteract or reduce environmental impacts. These measures may include: avoiding an impact by not taking a certain action or part of an action; minimizing an impact by limiting the degree or magnitude of an action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments.

### **Monitoring**

A process of collecting information to evaluate whether or not objectives of a project and its mitigation plan are being realized. Monitoring can occur at different levels: to confirm whether mitigation measures were carried out in

the matter called for (Implementation Monitoring); to confirm whether mitigation measures were effective (Effectiveness Monitoring); or, to validate whether overall goals and objectives were appropriate (Validation Monitoring).

### **Multiple Use**

The management of all the various renewable surface resources of the National Forest System so that they are used in the combination that will best meet the needs of the American people; harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources.

### **Muskeg**

A bog, often dominated by sphagnum moss, frequently with deep accumulations of organic material, occurring in wet, poorly drained northern regions. Peatland.

### **National Environmental Policy Act of 1969 (NEPA)**

An act declaring it a national policy to encourage productive harmony between humans and their environment and to promote efforts to better understand and prevent damage to ecological systems and natural resources important to the nation. Requires agencies to prepare detailed environmental impact statements for any major federal action significantly affecting the environment.

### **National Forest Management Act (NFMA)**

A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act, requires the preparation of Forest plans, requires the identification of management indicator species, and defines parameters for timber suitability.

### **National Forest System Road**

A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or local public road authority (36 CFR 212.1).

### **National Register of Historic Places**

A register of historic properties of national, state, or local significance, maintained by the Department of the Interior.

### **Non-interchangeable Component (NIC)**

Non-interchangeable components (NICs) are defined as increments of the suitable land base and their contribution to the allowable sale quantity (ASQ) that are established to meet Forest plan objectives. NICs are identified as parcels of land and the type of timber thereon which are differentiated for the purpose of Forest plan implementation. The total ASQ is derived from the sum of the timber volumes from all NICs. The NICs cannot be substituted for each other in the timber sale program.

### **Old-growth Forest**

Ecosystems distinguished by the later stages of forest stand development that differ significantly from younger forests in structure, ecological function, and species composition. Old-growth forests are characterized by a patchy, multi-layered canopy; trees that represent many age classes; large trees that dominate the overstory; large standing dead (snags) or decadent trees; and higher accumulations

## 4 References and Lists

of large down woody material. The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.

### **Old-growth Habitat Reserve**

A contiguous unit of old-growth forest habitat to be managed to maintain the integrity of the old-growth forest ecosystem.

### **Interior Old-growth**

Old-growth habitat (high, medium, and low volume strata) excluding a distance or buffer of two to three tree lengths (an average of 300 feet) around its inside perimeter.

### **Open Road Density**

The length of NFS roads open for public access and use per unit area of land; usually expressed as miles of open road per square mile of land.

### **Overstory**

The portion of trees in a forest that forms the uppermost layer of foliage. Canopy.

### **Palustrine**

Non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity is below 0.50 percent.

### **Plant Association**

Climax forest plant community type representing the endpoint of succession.

### **Pole Timber**

An immature tree between 5 and 9 inches diameter breast height.

### **Polychaetes**

A class of worms.

### **Precommercial Thinning**

The practice of removing some of the trees of less than marketable size from a stand in order to achieve various management objectives.

### **Practicable**

In reference to the Alaska Coastal Management Program, consistent with enforceable policies of approved management programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations.

### **Process Group**

A combination of similar stream channel types based on major differences in landform, gradient, and channel geometry.

### **Productive Forest Land**

Forest land that is capable of producing at least 20 cubic feet of annual tree growth per acre or contains at least 8,000 board feet of net timber volume per



acre. This includes second-growth stands that have regenerated with conifer species after natural or human disturbance.

**Productive Old-growth**

Old-growth stands capable of producing 20 cubic feet per acre per year with 8,000 or more board feet of timber per acre.

**Programmed Commercial Timber Harvest**

Timber harvest that occurs on suitable forested lands that contributes to the Tongass National Forest Allowable Sale Quantity.

**Recreation Opportunity Spectrum (ROS)**

A system for planning and managing resources that categorizes recreation opportunities into seven classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use.

**Recreation Places**

Identified geographical areas having one or more physical characteristics that are particularly attractive to people in recreation activities. They may be beaches, streamsides or roadside areas, trail corridors, hunting areas or the immediate area surrounding a lake, cabin site, or campground.

**Recreation Sites**

A specific site and/or facility occurring within a Recreation Place. Some examples of Recreation Sites are: recreation cabins, trailheads, picnic areas, and wildlife viewing blinds.

**Redd**

A nest made in gravel, consisting of a depression hydraulically dug by a fish for egg deposition and then refilled with gravel.

**Reserve Trees**

Merchantable or submerchantable trees and snags that are left within the harvest unit to provide biological habitat components over the rotation.

**Resident Fish**

Fish that are not anadromous and that reside in fresh water on a permanent basis. Resident fish include cutthroat trout and Dolly Varden char.

**Riparian Management Area**

The area including land, water, and plants in and adjacent to streams and lakes that is managed according to specific standards and guidelines prescribed for each stream process group.

**Road**

A motor vehicle route over 50 inches wide, unless identified and managed as a trail.(36 CFR 212.1)

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### **Road Construction**

Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction of a road. (36 CFR 212.1)

### **Road Decommissioning**

Activities that result in restoration of unneeded roads to a more natural state. These roads are not part of the National Forest System Roads. (36 CFR 212.1)

### **Road Maintenance**

Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives. (FSM 7714)

### **Road Reconditioning**

Heavier maintenance of an existing road such as culvert replacement, surface rock replacement, and subgrade repair. Renovation or restoration of an existing fixed asset or any of its components in order to restore the functionality or life of the asset. Reconditioning involves no significant expansion or change of purpose for the fixed asset. (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998)

### **Road Management Objective (RMO)**

Defines the intended purpose of an individual road based on Management Area direction and access management objectives. Road management objectives contain design criteria, operation criteria and maintenance criteria. Long-term and short-term roads have RMOs.

### **Rotation**

The planned number of years between the time that a forest stand is regenerated and its next cutting at a specified stage of maturity.

### **Sawtimber**

Trees that are suitable in size and quality for the production of dimensional lumber.

### **Scoping Process**

Early and open activities used to determine the scope and significance of a proposed action, what level of analysis is required, what data is needed, and what level of public participation is appropriate. Scoping focuses on the issues surrounding the proposed action and the range of actions, alternatives, and impacts to be considered in an EA or EIS.

### **Second Growth**

Forest growth that has come up naturally or has been planted after disturbance (for example, harvest, serious fire, or insect attack).

### **Seen Landscape**

Those areas visible from the most frequently used travelways (boat route, recreation road, or trail) or use area (recreation cabin or anchorage).

**Seldom-seen, or Not-seen, Landscape**

Those areas not visible from the most frequently used travelways (boat route, recreation road, or trail) or use area (recreation cabin or anchorage).

**Sensitive Species**

Animal and plant species identified by the Regional Forester as potentially susceptible or vulnerable to activity impacts or habitat alterations and, therefore, in need of special considerations during land management activity planning.

**Shell Midden**

A term referring to shell and bone that have been discarded after harvest and processing for subsistence use.

**Side-slope Break**

The abrupt change (usually decreases) in slope gradient defining the upper limit of stream channel incision.

**Silviculture**

The theory and practice of managing forest vegetation. Silviculture involves the appropriate application of ecological, social, and economic principles of vegetative management to achieve resource management objectives and desired future forest conditions.

**Silvicultural Prescription**

Detailed direction about methods, techniques, timing, and monitoring of vegetative treatments. A prescription is prepared by a silviculturist who uses interdisciplinary input to best achieve established objectives, direction, and requirements for land managed by the Forest Service.

**Silvicultural System**

A management process whereby forests are tended, harvested, and replaced resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the process.

**Site Index**

A measure of the relative productive capacity of an area for growing wood. Measurement of site index is based on height of the dominant trees in a stand at a given age.

**Soil Productivity**

Capacity of soil to produce plant growth due to the soil's chemical, physical, and biological properties.

**Sortyard**

A location used to sort grades, types, and size of logs.

**Stand**

A group of trees occupying a specific area and sufficiently uniform in composition, age arrangement, and condition as to be distinguishable from the forest in adjoining areas.

## 4 References and Lists

### **State Selection**

Application by Alaska Department of Natural Resources to the Bureau of Land Management for conveyance of a portion of the 400,000-acre State entitlement from vacant and unappropriated National Forest System lands in Alaska under the Alaska Statehood Act.

### **Storage**

The process/action of closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use.

### **Stream Discharge**

Flow rate of water in a stream channel.

### **Stream Value Class**

A means to categorize stream channels based on their fish production values. There are four stream classes defined by the Forest Plan. They are:

Class I. Streams and lakes with anadromous or adfluvial fish habitat; or high quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II. Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-5 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.

Class III. Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sediment and debris to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bankfull widths greater than five feet and are highly incised into the surrounding hillslope.

Class IV. Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.

### **Structural Diversity**

The diversity of forest structure, both vertically and horizontally, which provides for variety of forest habitats such as logs and multi-layered forest canopy for plants and animals.



**Subspecies**

An aggregate of similar populations of a species generally inhabiting a geographic subdivision of the range of the species and differing taxonomically (e.g. different size or color) from other populations of the species.

**Subsurface Flow**

Water moving laterally through and beneath the soil mantle.

**Succession**

The ecological progression of plant community change over time, characterized by displacements of species leading to a relatively stable climax community.

**Suitable Forest Land**

Forest land that is producing or is capable of producing crops of industrial wood and: a) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service, b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions, c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within five years after final harvest, d) adequate information is available to project responses to timber management activities, and e) where timber harvest is allowed under the Forest Plan.

**Sustained Yield**

The amount of renewable resources that can be produced continuously at a given intensity of management.

**Temporary Road or Trail**

A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas. (36 CFR 212.1)

**Threatened Species**

Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of the Interior as a threatened species.

**Tiering**

Elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, this EIS is tiered to the Forest Plan EIS.

**Timber Appraisal**

Establishing the fair market value of timber by taking the selling value minus manufacturing cost, the cost of getting logs from the stump to the manufacturer, and an allowance for profit and risk.

**Tongass Resource Use Cooperative Survey (TRUCS)**

A study done to gather information on subsistence uses of the Forest.

**Tongass Timber Reform Act (TTRA)**

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This act (1990) requires annual appropriations for timber management on the Tongass National Forest, with a provision providing for the multiple use and sustained yield of all renewable forest resources.

### **Transpiration**

Evaporation from within the leaves of plants.

### **Travel Management Atlas**

An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.

### **Two-aged Management**

A silvicultural method designed to maintain and regenerate a stand with two age classes. The resulting stand may be two-aged or trend toward the uneven-aged condition as a consequence of both an extended period of regeneration establishment and retention of reserve trees that may represent one or more age classes. The reserve trees provide structural diversity and a biological legacy. Two-aged management regimes can produce stands of greater structural diversity than even-aged management.

### **Unauthorized road or trail**

A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas. (36 CFR 212.1)

### **Understory Vegetation**

Grass, small trees, shrubs, and other plants found beneath the overstory (the trees comprising the forest).

### **Utility Volume**

Logs that do not meet minimum requirements for sawtimber but are suitable for other commercial uses.

### **V-notch**

A deeply cut valley along some waterways, generally in steep, mountainous terrain, that would look like a "V" from a frontal view.

### **Value Comparison Unit (VCU)**

A distinct geographic area that generally encompasses a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. These units were established in the Forest Plan to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

### **Viable Population**

For forest planning purposes a fish or wildlife population which has the estimated number and distribution of reproductive individuals to ensure its continued existence is well distributed in the National Forest.

### **Viewshed**

A distinct area of land visible from identified travelways (boat route, recreation road, or trail) or use areas (recreation cabin or anchorage).

**Visual Absorption Capacity (VAC)**

An estimate of the relative ability of a landscape to absorb alteration yet retain its visual integrity.

**Visual Quality Objective (VQO)**

A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.

**Volume Class**

Term used to describe the average volume of timber per acre in thousands of board feet (MBF).

**Volume Strata**

Divisions of old-growth timber volume derived from the aerial photo interpreted timber type data (TIMTYP) and the soils data (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan.

**Watershed**

That area that contributes water to a drainage or stream; portion of a forest in which all surface water drains to a common point. Can range from a few tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

**Water Yield**

The total amount of water draining from a watershed within a year.

**Wetlands**

Areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include muskegs, marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

**Wild and Scenic River**

Rivers or sections of rivers designated by congressional action under the 1968 Wild and Scenic Rivers Act or by an act of the Legislature of the state or states through which they flow.

**Wilderness**

Areas designated under the 1964 Wilderness Act. Wilderness is defined as undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions. In Alaska, wilderness also has been designated by TTRA and ANILCA.

**Wildlife Analysis Area (WAA)**

A division of land used by the Alaska Department of Fish and Game for wildlife analysis.

## 4 References and Lists

### **Windfirm**

Configuration of harvest units so as not to create an opening that exposes the adjacent stand of timber to the direction of the major prevailing storm wind (southeast).

### **Windthrow (Blowdown)**

The process by which trees are uprooted, blown down, or broken off by storm winds. Three types of windthrow include: endemic, where individual trees are blown over; catastrophic; where a major windstorm can destroy hundreds of acres of trees; and management related, where the clearing of trees in an area makes the adjacent standing trees vulnerable to windthrow.

### **Winter Range**

An area, usually at lower elevations, used by big game during the winter months; usually smaller and better defined than summer ranges.

### **Yarding**

Hauling timber from the stump to a collection point.



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Alaska Department of Fish and Game, Division of Wildlife Conservation  
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Alaska Department of Environmental Conservation  
Alaska Department of Environmental Conservation/Division of Water  
Alaska Department of Natural Resources, Office of Habitat Management and Permitting  
Alaska Department of Natural Resources, Office of Project Management and Permitting  
Alaska Department of Fish and Game  
Alaska Division of Forestry  
Department of the Army  
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US Advisory Council on Historic Preservation  
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USDA Forest Service Alaska Regional Office  
USDA Forest Service, Chugach National Forest  
USDA Forest Service, Tongass National Forest, Craig Ranger District  
USDA Forest Service, Tongass National Forest, Hoonah Ranger District  
USDA Forest Service, Tongass National Forest, Juneau Ranger District  
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 USDA Forest Service, Tongass Supervisor's Office  
 USDA Natural Resources Conservation Service  
 USDA Office of Civil Rights  
 USDI Bureau of Land Management  
 USDI Fish and Wildlife Service  
 USDI Office of Environmental Policy and Compliance  
 USDI Office of the Secretary  
 USDI National Park Service  
 USDOC National Marine Fisheries Service  
 USDOT Federal Aviation Administration  
 US Navy

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Alaska Fibre	Chico Area Flyfishers
Alaska Forest Association	The Committee for Conservation of Forests and Wildlife
Alaska Peak & Seas	Dolphin Charters
Alaska Rainforest Campaign	Earthjustice
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# **Appendix A**

## **Reasons for Scheduling the Environmental Analysis of the Kuiu Timber Sale**

## Appendix A

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# Reasons for Scheduling the Environmental Analysis of the Kuiu Timber Sale Project Area

## Introduction

This appendix provides an explanation of the rationale for a specific timber harvest project and its importance to the multi-year timber program on the Tongass National Forest. To accomplish this, the following questions are answered:

- *Why is timber from the Tongass National Forest being offered for sale?*
- *How does the Forest Service develop forecasts about future timber market demand?*
- *What steps must be completed to prepare a sale for offer?*
- *How does the Forest Service maintain an orderly and predictable timber sale program?*
- *How does the Forest Service decide where timber sale projects should be located?*

Coordinated timber sale planning is essential for meeting the goals of the Tongass Land and Resource Management Plan (Forest Plan) and to provide an orderly flow of timber to local industry. To determine the volume of timber to offer each year, the Forest Service can look to current market conditions and the level of industry operations. However, the planning process for timber harvest projects requires the Forest Service to rely on projections of future harvest levels to decide how many timber sale projects to begin each year. This document explains how the Forest Service uses information about future markets and past experience with timber sale planning to determine the volume of timber that needs to be started through this process each year. This appendix relies heavily on the current annual timber demand analysis and the most recent timber sale schedule.

# Why is Timber from the Tongass National Forest Being Offered for Sale?

### National Legislation

On a national level, the legislative record is clear about the role of the timber program in the multiple-use mandate of the national forests. One of the original objectives for creation of national forests was to provide natural resources, including timber, for the American public. The Organic Act of 1897 (partially repealed in 1976) directed the agency to manage the forests in order to "improve and protect the forest ... [and] for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States" (emphasis added). The Multiple-Use Sustained Yield Act of 1960 directs the Forest Service to administer federal lands for "outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

The National Forest Management Act (NFMA) of 1976 states that "the Secretary of Agriculture...may sell, at not less than appraised value, trees, portions of trees, or forest products located on National Forest System Lands." Although the heart of the Act is the land management planning process for national forests, the Act also sets policy direction for timber management and public participation in Forest Service decision making. Under NFMA, the Forest Service was directed to "limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis."

The NFMA directs the Forest Service to complete land management plans for all units of the National Forest System. Forest plans are developed by an interdisciplinary team to provide for the coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. Forest plans designate areas of national forest where different management activities and uses are considered appropriate including those areas suitable for timber harvest.

### Alaska-Specific Legislation

Timber from the Tongass National Forest is being offered for sale as part of the multiple-use mission of the Forest Service identified in the public laws guiding the agency. In addition, Alaska-specific legislation and the Tongass Forest Plan direct the Forest Service to seek to provide timber to meet market demand, subject to certain limitations.

The Alaska National Interest Lands Conservation Act (ANILCA) and the Tongass Timber Reform Act (TTRA) provide direction on the issue of Tongass timber supply. Section 101 of TTRA amended the ANILCA timber supply mandate and fixed budget appropriations and replaced them with the following text in Section 705 (a):

“Sec. 705. (a) Subject to appropriations, other applicable law, and the requirements of the National Forest Management Act of 1976 (P.L. 94-588); except as provided in subsection (d) of this section, the Secretary shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the annual market demand from such forest for each planning cycle.”

**Tongass National  
Forest Land and  
Resource  
Management Plan  
(Forest Plan, as  
amended)**

The Record of Decision for the Tongass Land Management Plan Revision (Forest Plan) was signed by the Alaska Regional Forester in 1997. The Forest Plan incorporated new resource information and scientific studies and reflected an extensive public involvement process.

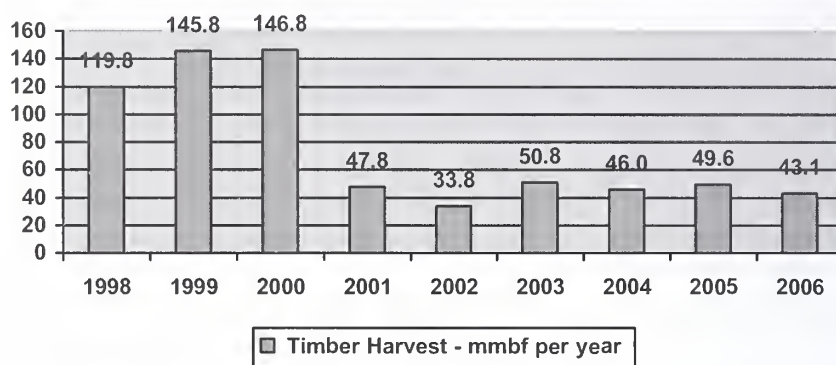
There was direction to supplement the 1997 Final EIS to evaluate and consider roadless areas within the Tongass for recommendation as potential wilderness areas as part of the March 2001 US District Court decision on litigation on the 1997 Forest Plan. The Record of Decision for the Supplemental Environmental Impact Statement was signed in February 2003. The No-action Alternative was selected; no additional lands were recommended for Wilderness designation and no changes were made to the Land Use Designations (LUDs) from the 1997 Record of Decision. The 1997 Forest Plan defines appropriate activities within each LUD. Approximately 74 percent of the Tongass is allocated to LUDs where commercial timber harvest is not allowed.

Amendments have been made to the 1997 Forest Plan, primarily to modify small Old-growth Habitat Reserves to meet Forest Plan criteria. These amendments have been accomplished through environmental analysis and are documented in decision documents. Due to those modifications, LUDs in certain areas have changed from development LUDs that allow timber harvest to Old-growth Habitat LUD or changed from the Old-growth Habitat LUD to development LUDs. Since the plan was signed in 1997, these amendments have affected two percent of the acres designated as suitable commercial timber by re-designating them as Old-growth Habitat LUD where timber harvest is not allowed.

The effects to resources in the Final EIS for the 1997 Forest Plan were analyzed as if the full timber harvest allowed under each alternative would occur over the next decade and into the future. In that way, the Forest Plan analysis displayed the maximum environmental effects that could be reasonably foreseen. Since substantially less timber volume and acres have been harvested since the 1997 Forest Plan revision than was analyzed, the effects on resources are expected to be less than projected in the 1997 Final EIS. The environmental effects analysis in the Forest Plan projected that up to 267 MMBF and 10,200 acres could be harvested per year based on the suitable forest lands where timber

harvest is compatible with the Forest Plan Land Use Designations. Forest Plan monitoring indicates that average annual harvest has been considerably less than that amount (Figure A-1).

**Figure A-1**  
**Tongass Timber Harvest, 1998-2006**



On August 5, 2005, the Ninth Circuit Court of Appeals ruled that a misinterpretation of the Brooks and Haynes 1997 draft timber demand projections rendered the 1997 Record of Decision for the Tongass Land Management Plan Revision arbitrary and capricious. The court of appeals remanded the matter for further proceedings consistent with the court's opinion (*Natural Resources Defense Council v. U.S. Forest Service*). The process of remedying the shortcomings identified by the court of appeals is in progress with a Forest Plan Amendment Draft EIS released in January 2007. However, there are lengthy time periods involved in clearing timber volume through the NEPA, administrative appeals and litigation processes. Clearing a timber sale project through the NEPA process is an important step in the process the Alaska Region uses to comply with this mandate. Delaying the completion of this and other site-specific projects until after a decision on the Forest Plan Amendment is made would undermine the Forest Service's ability to keep an even-flow of economical timber supply. This project will be reviewed for consistency with the decision on the Forest Plan Amendment.

### **Allowable Sale Quantity (ASQ)**

The ASQ serves as an upper limit on the amount of timber that may be offered for sale each decade as part of the regularly scheduled timber sale program. The Record of Decision for the 1997 Forest Plan states:

“The maximum amount of timber that could be harvested (Allowable Sale Quantity or ASQ) during the first decade of the Forest Plan implementation is an average of 267 MMBF per year. A timber volume level less than the ASQ is likely to be offered over



the next few years, given current market conditions, the transition that both the timber industry and the Forest Service are experiencing, and the current amount of appeals and litigation.

The ASQ is the maximum amount of sustainable timber harvest on suitable forest lands allocated to development by the Forest Plan, in accordance with its standards and guidelines and management direction. It consists of two separate Non-Interchangeable Components (NICs) called NIC I and NIC II. The NIC I component includes lands that can be harvested with normal logging systems including helicopter logging with less than  $\frac{3}{4}$  mile yarding distance. The NIC II component includes land that has high logging costs due to isolation or special equipment requirements. Most of these NIC II lands are presently considered economically and technically marginal.

There are two purposes of partitioning the ASQ into two components: (1) to maintain the economic sustainability of the timber resource by preventing the over-harvest of the best operable ground, and (2) to identify that portion of the timber supply that may not be harvested because of marginal economic conditions.

With regard to timber production sustainability, the Record of Decision for the 1997 Forest Plan further states:

“The timber resource will be managed for production of sawtimber and other wood products from timberlands available for sustainable timber harvest, on an even-flow, sustained-yield basis and in an economically efficient manner. The Tongass National Forest will seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle.

The Tongass National Forest will continue to allow timber harvest while maintaining sustained yield and multiple-use goals. The forest-wide standards and guidelines for timber include general direction to “[e]nsure that silvicultural systems other than clearcutting are considered through an appropriate project level analysis process.” However, uneven-aged management systems will be limited to areas where yarding equipment suited to selective logging can be used.

## **Roadless Area Conservation Rule**

The January 2001 Roadless Area Conservation Rule prohibited most timber harvest and road construction in inventoried roadless areas on National Forest System lands.

The Roadless Area Conservation Rule (1/12/2001) has been the subject of several lawsuits. In the most recent ruling (9/20/06), the court re-instituted the rule as it appears in the 2004 version of 36 CFR Parts 200 to 299. The rule in effect includes the text at 294.14(d): “this subpart does not apply to road construction, road reconstruction, or the cutting,

sale or removal of timber in inventoried roadless areas on the Tongass National Forest".

An analysis of the effects to roadless areas within the project area has been included as part of the analysis for this project. This project is consistent with agency policy and procedures and has been designed to meet the management direction, goals and objectives, and standards and guidelines in the Forest Plan.

### **How Does the Forest Service Develop Forecasts about Future Timber Market Demand?**

Consistent with the provisions of the Tongass Timber Reform Act, the Tongass National Forest makes two determinations on volume to be offered. The first, "annual market demand" is an estimate on volume to be offered for the current year, based on a forecast of annual timber market demand. The second is "planning cycle market demand" forecasts potential timber volume needs over the life of the Forest Plan. Annual market demand is analogous to assessing industry performance in the short-term. The general approach is to consider the timber requirements of the region's sawmills at different levels of operation and under different assumptions about market conditions and technical processing capability.

#### **Annual Market Demand**

The annual market demand forecast is a methodology used to set the short-term goals for the Tongass timber sale program – it is the projected volume of Tongass timber needed to meet annual market demand. The estimated annual market demand is the volume the Forest plans to offer for sale in the current year pending sufficient funding.

The reports Responding to the Market Demand for Tongass Timber (Morse, 2000) and Tongass National Forest Timber Sale Procedures (Morse, 2000a) document the formulas and procedures used in forecasting annual market demand. The Morse methodology originally used the projected harvest from the final 1997 Brooks and Haynes report. Currently calculations of the annual demand use the annual projected harvest from Brackley 2006 as one of the inputs. In addition, the methodology is self-correcting based on actual experience and considers such factors as mill capacity, utilization, and volume under contract. To the extent that actual harvest is lower than projected harvest, the inventory of timber under contract builds up and the demand for new timber decreases, as long as economic volume is available. The procedures are designed to be flexible given the uncertainty associated with forecasting market conditions. This is especially difficult in Southeast Alaska because of the structural transformation underway in the timber industry. The methodology accounts for the fact that the

Forest Service timber sale program cannot quickly respond to market fluctuations, and allows the industry to accumulate adequate volume under contract. The methodology includes provisions to monitor industry behavior and includes ways to adjust timber sale program levels to reflect harvest activity with some specific criteria for action. These assumptions provide a basis for estimating the volume of timber likely to be processed by the industry as a whole in any given year. The volume of timber likely to be purchased is equal to the volume needed to make up any inventory shortfall in addition to the volume likely to be harvested in the coming year.

To keep the annual demand current, the timber sale plan is updated each fiscal year for each ranger district, whereby the current year is dropped at the end of the fiscal year and a new year is added. These plans from the ranger districts are then consolidated into the Tongass Timber Sale Plan. In the past, the Tongass prepared a 10-year timber sale plan. For several reasons, the Tongass now uses a 5-year timber sale plan, which is consistent with Forest Service Manual 2430. These reasons include the difficulty to project changing market conditions, the outcome of timber harvest decisions affected by litigation, the time it will take to remedy the Forest Plan to be consistent with the court's opinion (*Natural Resources Defense Council v. U.S. Forest Service*) and the completion of the amendment to the Forest Plan currently in progress. This 5-year plan is based on completed and ongoing environmental analyses and will contain more-accurate information to purchasers and provide a plan that is easier to adjust in response to changing market conditions.

The volume that needs to be offered to meet the "annual market demand" for FY 07 is projected to be 131 MMBF. This figure was calculated using the Brackley 2006 "expanded lumber scenario" which allows for sufficient timber volume for the existing Southeast Alaska sawmills to operate efficiently. The spreadsheet displaying how this demand is calculated and a summary of the factors used in these calculations are in the project record.

The planned annual timber volume offer could include a combination of new, previously offered, and reconfigured timber sales. Both green timber and salvage will be components of the program. Offerings will consist of those targeted for Small Business qualified firms, as well as a portion of the volume being made available for the open market.

## Market Demand for the Planning Cycle

There have been a number of "planning cycle market demand" analyses prepared for Tongass timber program, including three series prepared by Brooks and Haynes (1990, 1994, and 1997) for the Forest Service's Pacific Northwest Research (PNW) Station that are the 1997 demand projections were used in the preparing the 1997 Tongass Forest Plan.

An update of the “planning cycle market demand” assessment by Brooks and Haynes (1997) was requested from the US Forest Service. In 2006, the PNW Research Station published new harvest projections (Brackley et al. 2006). The Brackley 2006 projections contain four scenarios, as opposed to the three in Brooks and Haynes (1997). These four scenarios include: 1) limited lumber production which represents the current situation where timber supply is limited; 2) expanded lumber production which represents the current industry in southeast Alaska operating without the current supply limitations; 3) medium integrated industry which represents an expansion of the current industry capacity and better utilization of forest products removed from public timber sales; and 4) high integrated industry which represents full utilization of forest products. More information about these scenarios is in the Forest Plan Amendment Draft EIS (January 2007).

The 2006 projections did not require changes to the basic methodology from the procedure outlined in Morse (2000a) except to use the projections from Brackley, 2006 rather than the 1997 Brooks and Haynes projections (Alexander, 2006).

**Table A-1. Projected Tongass National Forest Timber Harvest— in Million Board Feet (MMBF); (Alexander, 2006<sup>1</sup>)**

Year	1- Limited lumber scenario	2 - Expanded lumber scenario	3 -Medium integrated scenario	4 - High integrated scenario
2007	49.8	61.9	67	67
2008	49.8	66.4	139	139
2009	51.3	72.4	151	151
2010	52.8	78.5	166	166
2011	52.8	84.5	184	184
2012	54.3	90.5	204	286
2013	55.8	98.1	204	291
2014	57.3	105.6	204	295
2015	58.9	113.2	204	299
2016	58.9	122.2	204	303
2017	60.4	131.3	204	308
2018	61.9	140.3	204	312
2019	63.4	150.1	204	317
2020	64.9	163.0	204	325
2021	66.4	175.0	204	333
2022	67.9	187.1	204	342
2023	69.4	200.7	204	351
2024	70.9	215.8	204	360
2025	72.4	230.9	204	370



<sup>1</sup> Annualized calculation to fulfill derived demand scenarios from Brackley et al. (2006). This table was created using annualized values provided by Dr. Allen Brackley (personal communication, Nov 29 2006) from the model used to develop derived demand estimates in Brackley et al. (2006a). The values for Limited Lumber Scenario and Expanded Lumber scenarios reported in this table have been adjusted to include low quality material not included in the demand projections and include saw logs, cedar export, and utility (chip) volumes available from sawmill production. The Medium and High Integrated Scenarios are not adjusted and include saw logs, cedar exports, chip volumes, low-grade material, and utility in Brackley et al. (2006)

Both the “annual market demand” and the “planning cycle market demand” projections are important for timber sale program planning purposes. They provide guidance to the Forest Service to request budgets, to make decisions about workforce and facilities, and to indicate the need to begin new environmental analysis for future program offerings. They also provide a basis for expectations regarding future harvest, and thus provide an important source of information for establishing the schedule of probable future sale offerings. The weight given to the projections will vary depending on a number of factors, such as how recently they were done and how well they appear to have accounted for recent, site-specific events in the timber market.

## **What Steps Must Be Completed to Prepare a Sale for Offer?**

The Tongass National Forest’s timber sale program is complex. A number of projects are underway at any given point in time, each of which may be in a different stage of planning and preparation. A system of checkpoints, or “gates”, helps the Forest Service track the accomplishments of each stage of a project from inception to contract termination.

### **Gate 1 – Initial Planning of Timber Sale Project**

A Timber Sale Project Plan, often referred to as a Position Statement, is a brief analysis of the project area with the intent of determining the feasibility of a potential timber sale. After the Position Statement is developed, the Forest Service decides whether the project area merits continued investment of time and funds in sale planning.

### **Gate 2 – Project Analysis, Sale Area Design, and Decision**

This step is commonly referred to as the “NEPA” phase and includes field work, public scoping, analysis, draft disclosure of the effects of the project on the environment, public comment, final analysis and disclosure, decision, and potentially administrative appeals and litigation. Gate 2 activities must be completed before a sale is awarded. Legislation, policy changes, and appeals and litigation have recently extended completion of some projects for a much longer timeframe, often doubling the desired time frame.

### **Gate 3 – Preparation of a Timber Sale**

During this step, the information and direction included in the decision document from Gate 2 is used to layout units and design roads on the ground. Additional site-specific information is collected at this time. In order to maintain an orderly flow of sales, Gate 3 activities need to be complete before a sale is advertised.

### **Gate 4 – Advertise a Timber Sale**

The costs and value associated with the timber sale designed in Gate 3 are appraised and packaged in a timber sale contract. The contract is a legally binding document that tells a prospective timber sale purchaser how the sale must be harvested to conform to the project decision document. This step occurs during the final year of the project development and culminates with the advertisement of the project for sale.

### **Gate 5 – Bid Opening**

Gate 5 is completed with the opening of bids for the project. If a bid is submitted, contractual provisions govern when the award of the sale takes place, when the sale will be completed (contract length and operation season), and how timber removal is to occur.

### **Gate 6 – Award a Timber Sale Contract**

Gate 6 is the formal designation of a contract between a bidder and the Forest Service.

## **How Does the Forest Service Maintain an Orderly and Predictable Timber Sale Program?**

### **Pools of Timber (Pipeline Volume)**

As discussed earlier, the Forest Service tracks the accomplishment of the different steps of development of each timber sale with the Gate System process (Forest Service Handbook 2409.18). From a timber sale program standpoint, it is also necessary to track and manage multiple projects through a “pipeline” of time as projects collectively move through the Gate System. Because of the timeframes needed to accomplish a given timber sale and the complexities inherent in timber sale project and program development, it is necessary to track various timber sale program volumes from Gate 1 through Gate 6.

The goal of the Tongass National Forest is to provide an even flow of timber sale offerings on a sustained-yield basis to meet market demand. In recent years, this has been difficult to accomplish due to a combination of uncertainties such as delays related to appeals and litigation; changing economic factors, such as rapid market fluctuations; and industry-related factors, such as changes in timber industry processing capabilities. To achieve an even flow of timber sale offerings, ‘pools’ of volume in various stages of the Gate System are

maintained so volume offered can be balanced against current year demand and market cycle projections.

Today, upward trends in demand are resolved by moving out-year timber projects forward, which may leave later years not capable of meeting the needs of the industry. In other instances, a number of new projects are started based on today's market but will not be available for a number of years. By the time the added projects are ready for offer, the market and demand for this volume may have changed. Three pools of timber volume are tracked to achieve an even flow of timber sale offerings.

The objective of the timber pools concept is to maintain sufficient volume in preparation and under contract to be able to respond to yearly fluctuations in a timely manner. Refer to Table A-2, which displays the current estimated volume in each pool, as well as the goal for volume to be maintained in each pool, based on historic patterns. Based on historic patterns, the Tongass has established a goal for the volume to be maintained in each of the timber pools. Appeals and litigation can cause timber sale projects to be reevaluated to ensure they meet current standards and direction, which can cause delays in making projects available to move through the pools, thereby not fully meeting the goals for volumes in each pool.

### **Pool 1 - Timber Volume Under Analysis (Gate 1 and Gate 2)**

Volume in Gate 1, the initial planning step, represents a large amount of volume, but represents a relatively low investment in each project. This relatively low investment level offers the timber program manager a higher degree of flexibility and thus, does not greatly influence the flow of volume through the pipeline.

Gate 2, timber volume under environmental analysis, includes sales being analyzed and undergoing public comment through the NEPA process. This pool includes any project that has started the scoping process through those projects ready to have a decision issued. In addition, tracking how much volume is involved in appeals or litigation may be necessary to determine possible effects on the flow of potential timber sales. Volume in appeals and litigation is tracked as a subset of this pool as necessary (Table A-3).

Based on historic patterns, the Tongass has established a goal for the pipeline volume to be maintained in each of the timber pools. The goal for Pool 1 is to be maintained at approximately 4.5 times the amount of the projected harvest to account for projects at various stages of analysis. That goal reflects a number of factors which can lead to a decrease in volume available, such as a decision in Gate 1 to drop further analysis in a particular planning area (called the "no go" decision), a falldown in estimated volume between Gate 1 and Gate 2, and volume not available for harvest due to appeals or litigation.



### **Pool 2 - Timber Volume Available for Sale (Gates 3, 4 and 5)**

Timber volume available for sale includes sales for which environmental analysis has been completed, and have had any administrative appeals and litigation resolved. Enough volume in this pool is needed to be maintained to be able to schedule future sale offerings of the size and configuration that best meets market needs in an orderly manner.

As a matter of policy and sound business practice, the Forest Service announces probable future sale offerings through the Periodic Timber Sale Announcement. Recent delays at Gate 2 have affected sale preparation and have made scheduling uncertain. At Gate 4, sales have been fully prepared and appraised, and are available to managers to advertise for sale. This allows potential purchasers an opportunity to do their own evaluations of these offerings to determine whether to bid, and if so, at what level.

Timber in this pool can include a combination of new sales, previously offered unsold sales, and remaining volume from cancelled sales. The goal is to maintain Pool 2 at approximately 1.3 times the amount of the projected harvest to allow flexibility in offering sales.

### **Pool 3 - Timber Volume under Contract (Gate 6)**

Timber volume under contract contains sales that have been sold and a contract awarded to a purchaser, but which have not yet been fully harvested. Contract length is based on the amount of timber in the sale, the current timber demand, and the accessibility of the area for mobilization. The longer the contract period, the more flexibility the operator has to remove the timber based on market fluctuations. Timber contracts typically initially give the purchaser 3 years to harvest and remove the timber purchased. Analysis of Tongass timber sales indicates an average sale length of about 6 years due to modifications in the contracts due to inoperable periods of weather, injunctions, and other contractual delays.

The Tongass attempts to maintain roughly 3 years of unharvested volume under contract to the industry as a whole. This volume of timber is the industry's dependable timber supply, which allows adaptability for business decisions. This practice is not limited to the Alaska Region, but is particularly pertinent to Alaska because of the nature of the land base. The relative absence of roads, the island geography, the steep terrain, and the consequent isolation of much of the timber land means that timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

A combination of projected harvest and projected demand is used to estimate the volume needed to maintain an even-flow timber sale program. As purchasers harvest timber, they deplete the volume under contract. Timber harvest is then planned and offered by the agency as



sales that give the industry the opportunity to replace this volume and build or maintain their working inventory. Although there will be variation for practical reasons from year to year, in the long-run over both the high points and low points of the market cycle, the volume harvested will equal the timber volume sold, excluding cancelled sales.

The goal for Pool 3, volume under contract, is to maintain timber volume at approximately three times the amount of annual projected harvest. This allows the purchasers to have a continuous supply of timber volume available for harvest so they can plan their operations and be flexible to allow for weather conditions and market fluctuations.

**Table A-2**  
**Accomplishments in Gate System and Timber Pools (MMBF)**

<b>Pipeline Pool Volume</b>	<b>2007 Goal</b>	<b>FY 07 (as of 1/1/07)</b>
<b>Pool 1</b>		
Volume Under Analysis (Gates 1 and 2)	279 <sup>1</sup>	350
<b>Pool 2</b>		
Volume Available for Sale (Gates 3, Gate 4 and Gate 5)	79 <sup>2</sup>	304 <sup>3</sup>
<b>Pool 3</b>		
Volume Under Contract (Gate 6)	186 <sup>4</sup>	100 <sup>5</sup>

<sup>1</sup> The goal for volume under analysis is approximately 4.5 times the projected harvest for the current year (61.9 MMBF for 2007 based on expanded lumber scenario). Volume under analysis includes all volume in projects from the Notice of Intent through completion of the environmental analysis for sales planned.

<sup>2</sup> The goal for volume available for sale is to have at least 1.3 times the projected harvest for the current year (61.9 MMBF) in sales that have approved NEPA and completion of timber sale preparation.

<sup>3</sup> Includes volume from sales mutually cancelled under the provision of the 2004 Appropriations Act (Sec. 339). However, most of this volume appraises deficit under current market conditions and can not be offered for sale under Congressional direction in the 2006 Appropriations Act (Public Law 109-54, Sec. 416). Does not include volume under litigation – see Table A-3.

<sup>4</sup> The goal for volume under contract is for purchasers to have 3 times the volume under contract as projected for harvest for the current year (61.9 MMBF).

<sup>5</sup> Estimated volume under contract available for harvest (not including timber enjoined from harvest or sales that have had mutual cancellation requests granted).

How Appeals and  
Litigation Affect the  
Timber Sale  
Program

Timber harvest projects require site-specific environmental analysis that usually is documented in an environmental assessment (EA) or an environmental impact statement (EIS). The public is notified of the analysis and is provided the opportunity to comment on proposals and file an appeal on decisions. The administrative appeal process for most timber harvest projects takes up to 105 days before implementation to occur.

When decisions are appealed and affirmed through the administrative appeal process, the project can still be litigated. Litigation can be a lengthy process. Although litigation does not preclude offering timber for sale, the Forest Service and potential purchasers are often reluctant to enter into a contract where the outcome is uncertain. Recently, sales were enjoined from harvest after the contracts were awarded. The outcome of litigation affects the Forest's ability to provide a reliable timber supply.

**Table A-3**  
**Timber Volume Involved in Appeals and/or Litigation<sup>1</sup>**

Timber volume remanded on appeals <sup>2</sup>	23 MMBF
Timber volume involved with litigation	35.2 MMBF

<sup>1</sup> As of May 23, 2007 – date of Settlement Agreement with NRDC.

<sup>2</sup> Remanded – Decision overturned during internal review. Does not include volume in decisions currently in the appeal period or undergoing an appeal review.

**How Does the Forest Service Decide  
Where Timber Harvest Projects should  
be Located?**

The location of timber sale projects is based first on the land allocation decisions in the Forest Plan. Under the 1997 Forest Plan, lands designated for possible timber harvest are in the development Land Use Designations (LUDs), primarily the Timber Production, Modified Landscape, and Scenic Viewshed LUDs.

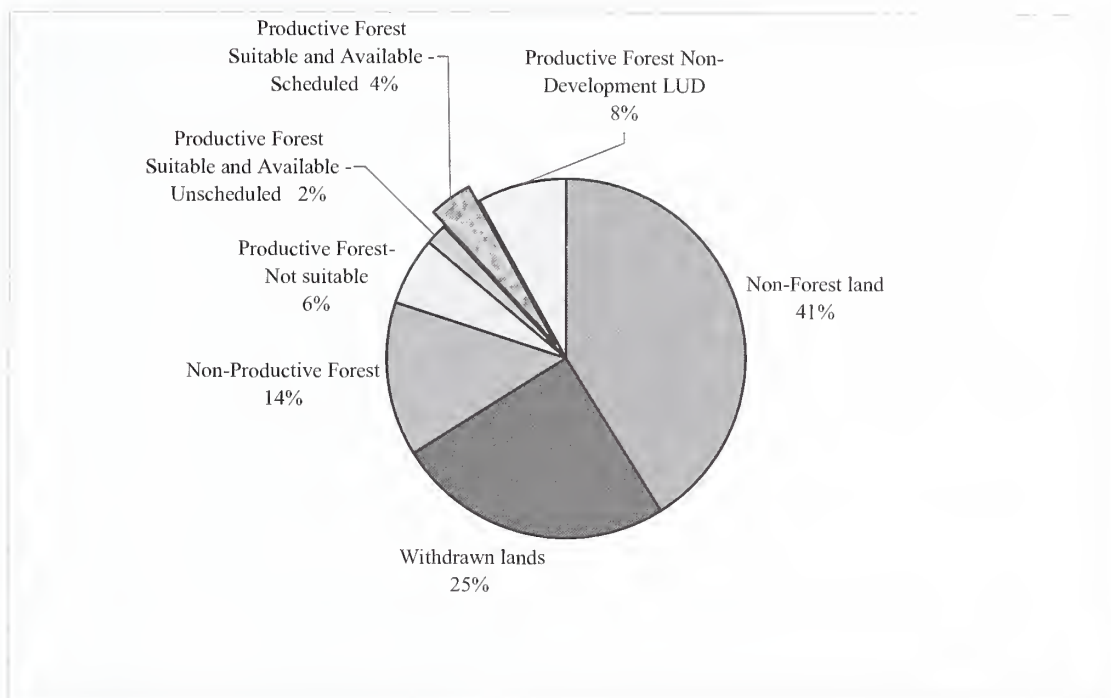
Timber Resource  
Land Suitability

The second consideration is the suitability of the land for timber production. Many acres within the development LUDs are not suitable for timber production due to poor soils or steep slopes. The process for determining the suitability of the land is found in the Forest Plan, Appendix A. Figure A-2 depicts the classification of all the lands within the Tongass National Forest. Four percent of the Tongass land base, the suitable, available and scheduled forest land, provides the land base for the Allowable Sale Quantity of 267 MMBF per year. Under the 1997

Forest Plan, the remainder of the land, approximately 96 percent, does not allow, is not scheduled, or is not physically suitable.

**Figure A-2**

**1997 Forest Plan Timber Resource Suitability Analysis**



Non-Forest land – Land that has never supported forests, e.g. muskeg, rock, ice, etc.

Withdrawn Lands – Lands designated by Congress, the Secretary of Agriculture, or Chief for purposes that preclude timber harvest, e.g. Wilderness Areas

Non-productive Forest – Forest land not capable of producing commercial wood on a sustained yield basis

Productive Forest, Not suitable, Physical Attributes – Forest land unsuitable for timber due to physical attributes (steep slopes, soils, etc.) and/or inadequate information to ensure restocking of trees within five years of final harvest.

Productive Forest, Not Suitable, Non-development LUD – Productive forest lands where timber production is not allowed due to Forest Plan land use designation, e.g. Semi-Remote Recreation, Old-growth Habitat, etc.

Productive Forest, Suitable and Available, Scheduled – Forest land that meets all the criteria for timber production suitability and is available and is scheduled by the Forest Plan over the planning horizon

Productive Forest Suitable and Available Unscheduled – Forest land that meets all the criteria for timber production suitability, is available for harvest, however was not scheduled in the Forest Plan model for harvest.

## District-Level Planning

The Tongass National Forest is divided into ten ranger districts. For planning and scheduling purposes, the Allowable Sale Quantity (ASQ) has been allocated to the ranger districts based on the Forest Plan modeling (FORPLAN) results of suitable and available acreage. The average annual distribution of the full Forest Plan ASQ by ranger

districts is displayed in Table A-4 (all volumes are identified as sawlog plus utility).

**Table A-4**

**Annual Distribution of Forest Plan Allowable Sale Quantity (mmbf) by District**

Ranger District	Non-Interchangeable Component (NIC) <sup>1</sup>	
	NIC I	NIC II
Ketchikan/Misty Fiords	32	7
Thorne Bay	42	9
Craig	33	7
Wrangell	28	6
Petersburg	50	9
Sitka	17	4
Hoonah	7	2
Juneau	7	2
Yakutat	4	1
Admiralty National Monument	0	0
NIC Totals	<b>220</b>	<b>47</b>
<b>ASQ Total(mmbf)</b>	<b>267</b>	

<sup>1</sup> NIC I component – lands that can be harvested with normal logging systems including helicopter logging with less than  $\frac{3}{4}$  mile yarding distance.

NIC II component – includes land that has higher logging costs due to isolation or special equipment requirements.

The Forest Supervisor for the Tongass National Forest is responsible for the overall management of the Forest's timber sale program. Included within these responsibilities is making the determination on the amount of timber volume to be made available to industry. Whether or not sufficient funding is appropriated to attain the program is the responsibility of the Congress and the President.

The District Rangers to develop a timber sale plan of the potential timber harvest projects. This plan aims to attain the prescribed offer level for the current year based on the estimated annual market demand and to develop a timber program for several years of the planning cycle. The offer level for the current year in this plan is based, to the extent possible, on the forecasted annual market demand. Demand may fluctuate from year to year but recent years have shown little change in the annual demand projection. Offerings may vary from year to year but



recently they have been in the low market scenario range, as determined by the projected annual demand.

The District Ranger is responsible for identifying and recommending the project areas for the 5-Year Timber Sale Plan. The Ranger's role is to develop and recommend to the Forest Supervisor timber harvest projects that meet Forest Plan goals and objectives. Districts work on various timber sale projects simultaneously, resulting in continual movement of projects through the stages of the timber program pipeline. This schedule allows the necessary time to complete preliminary analysis, resource inventories, environmental documentation, field layout preparations and permit acquisition, appraisal of timber resource values, advertisement of sale characteristics for potential bidders, bid opening, and physical award of the timber sale. Project delays through the completion of Gate 2 attributable to legal injunctions and litigation have affected the offer level in recent years. Once all of the Rangers' recommendations are made and compiled into a consolidated schedule, the Forest Supervisor is responsible for the review and approval of the final timber sale plan.

Considerations the District Ranger takes into account for each project include:

- The project area contains a sufficient number of suitable timber production acres allocated to development land use designations. Available information should indicate that the timber volume being considered for harvest can be achieved while meeting Forest Plan goals, objectives, standards and guidelines.
- Other resource use and potential future uses of the area and of adjacent areas and of non-National Forest lands.
- Areas where the investment necessary for project infrastructure (roads, bridges, etc.) is achievable with the estimated value of timber in the project area. Where infrastructure already exists, the project would allow any maintenance and upgrade of facilities necessary for removal of timber volume.
- Area where investments for the project coincide with long-term management based on Forest Plan direction.

The implementation of the sales on the timber sale plan depends in part on the final budget appropriation to the agency. In the event insufficient budget is allocated, or resolution of pending litigation or other factors delay planned sales, timber sale projects are selected and implemented on a priority basis. Generally, the higher-priority projects include sales where investments such as road networks, camps or log transfer facilities have already been established or where land management status is not under dispute. The distribution of sales across the Tongass is also taken into account to distribute the effects of sales and to provide

sales in proximity to timber processing facilities. Timber sale projects scheduled for the current year that are not implemented, or the remaining volume of sales that are only partially implemented, are shifted to future years in the plan. The sale plan becomes very dynamic in nature due to the number of influences on each district.

This project meets all laws and regulations governing the removal of timber from National Forest System lands, including Forest Service policies as described in Forest Service manuals and handbooks and the 1997 Forest Plan and Record of Decision. Based on current year and anticipated future timber volume demand and the timber supply provisions of the Tongass Timber Reform Act, the analysis of the Kuiu Timber Sale is prudent at this time to meet timber sale needs as included on the approved multiple-year timber sale plan. The anticipated budget allocations and the availability of resources are sufficient to prepare and offer this project for sale as scheduled.

### **How Does This Project Fit into the Tongass Timber Program?**

This project is currently in Gate 2, Project Analysis. The amount of volume considered for harvest under the action alternatives ranges from 14.1 MMBF to 41.4MMBF, which would contribute to the Tongass timber sale program. A no-action alternative is also analyzed in this EIS. If an action alternative is selected in the decision for this project, this volume will be added to the volume available for sale.

As described in the Pools of Timber section of this appendix, the volume of timber needed to maintain Pool 1 is 4.5 times the amount of the projected harvest to account for projects at varying stages of analysis for that year. As displayed in Table A-2, the goal for volume under analysis is 589 MMBF. Currently, the forest-wide volume under analysis (Pool 1) is about 490 MMBF and includes the volume for this project. This project contributes to timber sale program planning objectives to meet the goal of providing an orderly flow of timber from the Tongass on a sustained yield basis to meet timber supply requirements. It is reasonable to be conducting the environmental analysis for this project at this time. The timber volume from this project is currently proposed for offer in Fiscal Year 2008.

### **Why is This Project Occurring in This Location?**

As explained above, timber harvest project areas are selected for environmental analysis for a variety of reasons. The reasons this project is being considered in this area include:

- The area is identified in the Forest Plan as Timber Production LUD.
- The Kuiu Timber Sale Area contains sufficient acres of suitable and available forest land to make this timber harvest proposal reasonable. Areas with available timber need to be considered for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand from such forest, and (2) meets the market demand from such forest for

each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).

- Providing substantially less timber volume than required to meet Forest Plan and TTRA Section 101 timber supply and employment objectives in order avoid harvest in the project area is not necessary or reasonable.
- There is an existing road system. Some new NFS and temporary road would be required to access timber.
- There are two LTFs with the associated sort yards available for log transfer. The Rowan Bay LTF would require no upgrading and the Saginaw Bay LTF would require some reconstruction, including the development of a low angle barge ramp.

Effects on subsistence resources from timber harvest Tongass-wide are projected to have few differences based on the sequence in which areas are harvested. Harvesting other areas with available timber on the Tongass National Forest would be expected to have greater potential effects on subsistence resources because of the relatively low level of subsistence harvest in this project area. Harvest within other areas is foreseeable under the Forest Plan.

## Conclusion

There is a long legislative recognition that timber harvest is one of the appropriate activities on national forests, starting with the founding legislation for national forests in 1897. The National Forest Organic Act provides that national forests may be established “*to improve and protect the forest within the boundaries of, or for the purposes of securing favorable conditions of water flows and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.*”

Congress’s policy for national forests, as stated in the Multiple-Use Sustained Yield Act of 1960, is “the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” Accordingly, Congress has authorized the Secretary of Agriculture to sell trees and forest products from the national forests “at no less than appraised value.” The National Forest Management Act directs that forest plans shall “provide for multiple use and sustained yield, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife, fish and wilderness.”

In addition to nationwide statutes, Section 101 of the Tongass Timber Reform Act directs the Forest Service to seek to meet market demand for timber from the Tongass, subject to certain qualifications. It is the goal of the Tongass National Forest to provide an even-flow of timber on a sustained-yield basis and in an economically efficient manner. The



amount of timber offered for sale each year is based on the objective of offering enough volume for sale to meet the projected annual demand. That annual demand projection starts with installed mill capacity, and then looks to industry rate of capacity utilization under different market scenarios, the volume under contract, and a number of other factors, including anticipated harvest and the range of expected timber purchases.

As described by Morse (April 2000), in terms of short-term economic consequences, oversupplying the market is less damaging than undersupplying it. If more timber is offered than purchased in a given year, the unsold volume is still available for re-offer in future years. The unsold volume would have no environmental effects because it would not be harvested. Conversely, a short fall in the supply of timber can be financially devastating to the industry. This project could supply from 9.6 MMBF to 33.4 MMBF of volume for sale, with harvest potentially beginning in 2008.

## References

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# **Appendix B**

## Activity Cards

## **Appendix B**

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## Introduction to Appendix B

Activity cards are used to explain site-specific proposed activities and any resource concerns and responses. These activities include timber harvest units and proposed and existing roads needed for timber harvest. Both narratives and maps showing site-specific information are provided.

The introduction to Appendix B is followed by a narrative card and a map for each proposed harvest unit. These units are in numerical order. Not every unit is in each alternative. The maps show all proposed adjacent units whether or not they are in the same alternatives. Figure B-1 shows all the units as they lie in the project area.

The last section of this Appendix lists existing and proposed NFS roads used for the alternatives. It describes the current conditions and management objectives, and proposed road management objective changes. The Introduction to the Road Cards explains the terminology used for the Road Management Objective narrative. A map is included that shows all the roads and their desired future management.

## Unit Card Header Information

Each unit card has a header block with information used to generally describe the stand's size, location, and volume proposed for harvest. Each header block contains the following information:

**Unit Number:** This is the number assigned to the unit block during the Logging Systems and Transportation Analysis development.

**Unit Acres:** This is an estimate of total acres within the unit using aerial photos and GIS information.

**Alternatives:** This identifies the alternative(s) in which the unit is proposed.

**Aerial Photo:** This is the identification number of the most recent aerial photograph taken during 1998-99.

**Land Use Designation (LUD):** Land Use Designation is a defined area of land, identified by the Forest Plan, to which specific management direction is applied. All proposed units are in the Timber Production LUD.

**Net Timber Volume:** This is an estimated volume in thousand board feet to be harvested. This was derived from field estimates and the stand exam program. A cruise will be done during implementation to determine an accurate volume before the timber is sold.

**TM Compartment and Stand:** This identifier is used for tracking purposes from planning through implementation and future treatments.

**Volume Strata Acres:** This is the approximate number of acres broken out by volume strata. Three volume strata (high, medium, and low) are recognized in the Forest Plan and explained in the Timber and Vegetation section of Chapter 3.

**Existing Stand Condition:** This is the developmental stage of the physical and temporal distribution of trees and other plants in a forested area.

**Silvicultural Prescription:** This provides information about the methods, techniques, timing, and monitoring of vegetative treatments. The detailed silvicultural prescription is in the planning record.

**Logging Method/Transportation:** This identifies the method of logging in the unit and the transportation used.

## Harvest Treatments

Silvicultural prescriptions include these unit cards plus the sale layout and marking guidelines that would be completed for each of the timber harvest units that are included in the Kuiu Timber Sale Area Record of Decision. Minor changes can be expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency or for site conditions.

### Even-aged Management, Clearcut

All merchantable trees will be harvested. The objectives of this system are to create a fast-growing stand of trees to maximize wood fiber production, favorable timber sale harvest economics and logging feasibility. These stands would regenerate into a mostly single-aged stand.

### Two-aged Management

This system regenerates and maintains a stand with two age classes by removing trees in clumps or as individual trees. Reserves or clumps would be distributed somewhat evenly across the harvest unit or stand, and away from the unit boundary. The resulting stand may be two-



## Uneven-aged Management

aged or trend toward the uneven-aged condition as a consequence of both an extended period of regeneration establishment and retention of reserve trees that may represent one or more age classes. Two-aged management regimes can produce stands of greater structural diversity than even-aged management. These stands would not be reentered for harvest until the next rotation in approximately 100 years.

This system regenerates and maintains a multi-aged structure by removing some trees in all size classes either singly, in small groups, or in strips. Uneven-aged management maintains or creates a stand with trees of three or more distinct age (size) classes, either intimately mixed or in small groups. This remaining structure provides wildlife habitat and reduces visual impacts. The next entry into these stands would be in approximately 75 years, when approximately 25 percent of the stand's pre-harvest basal area would be removed in patches or in single trees.

### Group Selection

Stands proposed for this prescription would have approximately 50 percent of the area remaining uncut after harvest. Merchantable trees (trees greater than 9 inches in diameter) would be harvested in small patches to form a mosaic of irregularly shaped openings within the stand. Smaller trees may be left in this area if the larger trees can be safely removed. Each group harvested would consist of a mixture of tree sizes. Each harvested opening will regenerate, creating a patch of trees with a uniform age and height. These openings may be thinned. This will create a stand of three or more distinct size classes in small groups, resulting in an uneven-aged stand.

### Single Tree Selection

Stands proposed for this prescription would have approximately 50 percent of the basal area of the trees remaining after harvest. This will regenerate and maintain a multi-aged structure by removing some trees in various size classes distributed across the stand. Trees to be harvested would be selected using a criterion such as species, diameter limits or spacing. A range of diameters, or everything above or below a certain diameter limit, may define the trees selected for harvest. Different diameters may be used for different species. The resulting stand may have small openings plus individual trees harvested throughout the stand. This will maintain or create a stand of three or more distinct size classes distributed throughout the stand, resulting in an uneven-aged stand.

### Resource Concerns and Responses

In the Kuiu Timber Sale Area, most of the economic, wildlife, and watershed concerns are mitigated with the silvicultural system. Other resource concerns, such as soils, scenery, and fisheries, are mitigated by unit design and adherence to Forest Plan standards and guidelines and Best Management Practices (BMPs).

#### Riparian Management Areas

Forest Plan Standards and Guidelines and BMP 12.6 direct the design of Riparian Management Areas (RMAs) associated with each stream in the Project Area. The Standards and Guidelines prohibit programmed commercial timber harvest in RMAs associated with all Class I, Class II, and most Class III streams, except for right-of-way clearing for road construction.

RMAs vary in width from the edge of the stream channel according to process group (Table B-1) and stream value class (Table B-2). All Class I and Class II streams are protected from commercial timber harvest within a minimum horizontal distance of 100 feet from the bankfull margins. Depending on the channel type, RMA widths can be up to 140 feet wide on either side of some Class I, Class II, and Class III streams. RMAs adjacent to Class III streams are protected from commercial timber harvest, except along palustrine channel types. RMA widths on Class III streams are extended to the side-slope break (top of the V-notch).

Unit card maps show the location of all streams, numbered for reference, and the associated RMAs. RMA widths for each Class I, Class II, and Class III stream are described in the unit card narratives.

Windthrow concerns within riparian buffers are addressed in the unit card narratives. Riparian buffers on south facing slopes in units with a prescription other than uneven-aged management by single tree selection would be protected by retaining additional trees adjacent to the buffers. In units with a two-aged, clearcut with reserves or uneven-aged, group selection prescription, some of the retention would be along the riparian buffers. In units with uneven-aged, single tree selection prescriptions, the distribution of trees across the unit would help protect the buffers. In units with an even-aged prescription, the windthrow prone buffers would be protected by feathering the edge for a distance of 50 horizontal feet where trees are less than 16 inches DBH. Those trees that cannot be felled away from the buffer, would be retained.

Log yarding practices are based on slope stability, soil disturbance, channel type, and stream class. Additional measures are taken to

protect RMAs from possible disturbance associated with tree felling and yarding. Harvest activities near Class I, Class II, and Class III streams require that trees be felled away from the stream and that trees yarded across or along stream courses be fully suspended to minimize the exposure of mineral soil. Trees near Class IV streams are felled away from the stream whenever feasible and logging debris introduced into Class IV streams is removed. Class IV streams are treated as part of the hillside, under slope stability standards and guidelines. The objective is to minimize soil erosion, mass movement, and formation of new channels.

### **Best Management Practices**

The following Best Management Practices (BMPs) would be applied in order to protect water quality in the project area as specified in the Forest Plan (pages C-1 to C-3). The BMPs are cited on the Unit Cards and Road Cards where appropriate. Not all BMPs apply to every situation.

**BMP 12.6 (Riparian Area Designation and Protection)** – To identify riparian areas and their associated management activities.

**BMP 12.6a (Buffer Design and Layout)** – To design streamside buffers to meet objectives defined during the implementation of BMP 12.6.

**BMP 12.17 (Revegetation of Disturbed Areas)** – To provide ground cover to minimize soil erosion.

**BMP 13.5 (Identification and Avoidance of Unstable Areas)** – To avoid triggering mass movements and resultant erosion and sedimentation by excluding unstable areas from timber harvest.

**BMP 13.9 (Determining Guidelines for Yarding Operations)** – To select appropriate yarding systems and guidelines for protecting soil and water resources.

**BMP 13.16 (Stream Channel Protection – Implementation and Enforcement)** – To provide the site-specific stream protection prescriptions consistent with objectives identified under BMPs 12.6 and 12.6a. Objectives may include the following:

- Maintain the natural flow regime.
- Provide for unobstructed passage of storm flows.
- Maintain integrity of the riparian buffer to filter sediment and other pollutants.
- Restore the natural course of any stream that has been diverted as soon as practicable.

- Maintain natural channel integrity to protect aquatic habitat and other beneficial uses.
- Prevent adverse changes to the natural stream temperature regime.

**BMP 14.1 (Transportation Planning)** – To assure soil and water resources are considered in transportation planning activities.

**BMP 14.2 (Location of Transportation Facilities)** – To assure water resources protection measures are considered when locating roads and trails.

**BMP 14.3 (Design of Transportation Facilities)** – To incorporate site-specific soil and water resource protection measures into the design of roads and trails.

**BMP 14.5 (Road and Trail Erosion Control Plan)** – Develop erosion control plans for road or trail projects to minimize or mitigate erosion sedimentation and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.

**BMP 14.6 (Timing Restrictions for Construction Activities)** – Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods.

**BMP 14.7 (Measures to Minimize Mass Failures)** – Minimize the chance and extent of road-related mass failures, including landslides and embankment slumps.

**BMP 14.8 (Measures to Minimize Surface Erosion)** – Minimize the erosion from cutslopes, fillslopes, and the road surface, and consequently reduce the risk of sediment production.

**BMP 14.9 (Drainage Control to Minimize Erosion and Sedimentation)** – Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design and construction of drainage control systems.

**BMP 14.10 (Pioneer Road Construction)** – Minimize sediment production associated with pioneer road construction.

**BMP 14.11 (Timely Erosion Control Measures for Incomplete Projects)** – Minimize erosion of and sedimentation from disturbed ground on incomplete projects by completing erosion control work prior to seasonal or extended shutdowns.



**BMP 14.12 (Control of Excavation and Sidecast Material) –**

Minimize sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance.

**BMP 14.14 (Control of In-channel Operations) –** Minimize stream channel disturbances and related sediment production.

**BMP 14.15 (Diversion of Flows Around Construction Sites) –**

Identify and implement diversion and de-watering requirements at construction sites to protect water quality and downstream uses.

**BMP 14.17 (Bridge and Culvert Design and Installation) –**

Minimize adverse impacts on water quality, stream courses, and fisheries resources from the installation of bridges, culverts, or other stream crossings.

**BMP 14.20 (Road Maintenance) –** Maintain all roads in a manner which provides for soil and water resources protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities.

**BMP 14.22 (Access and Travel Management) –** Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions.

**Process Groups and Channel Types**

The Tongass National Forest defines stream channel types according to the Channel Type User Guide (USDA Forest Service 1992), the foundation upon which aquatic habitat management prescriptions are developed. Channel types are defined within the context of fluvial process groups that describe the interrelationship between watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion and deposition processes. Individual channel type classifications are defined by physical attributes such as channel gradient, channel width, channel pattern, stream bank incision and containment. Table B-1 shows the Forest Plan codes used on the unit card narratives. See the Forest Plan, Figure D-1 (page D-4) for a visual representation of the typical distribution of channel process groups. Each unit card summarizes the protection for a particular unit. Only the channel types found in proposed timber harvest units are listed.

Table B-1. Channel Types in or adjacent to proposed harvest units

Process Group	Channel Type Code	Channel Type Description
<b>High Gradient Contained</b>	HC2	Shallowly to Moderately Incised Footslope Channel
	HC3	Deeply Incised Upper Valley Channel
	HC5	Shallowly Incised Very High Gradient Channel
	HC6	Deeply Incised Mountain Slope Channel
<b>Moderate Gradient Contained</b>	MC2	Moderate Width and Incision Contained Channel
<b>Moderate Gradient Mixed Control</b>	MM1	Narrow Mixed Control Channel
	MM2	Moderate Width Mixed Control Channel

Table B-2. Stream Value Classes

Stream Value Class	Criteria
Class I	Streams and lakes with anadromous or adfluvial fish or fish habitat; or high quality resident fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.
Class II	Streams and lakes with resident fish or fish habitat and generally steep (6-25 percent or higher) gradient (can also include streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria.
Class III	Streams are perennial and intermittent streams that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. For streams less than 30 percent gradient, special care is needed to determine if resident fish are present.
Class IV	Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence on downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II, or III streams and have a bankfull width of at least 0.3 meter (1 foot).









# Kuiu Timber Sale

## Figure B-1

### Unit Pool

#### Legend

-  Unit Pool
-  Non-National Forest
-  Lakes/Saltwater
-  Project Area Boundary
-  Existing Open Roads
-  Stream Value Class I & II







# Unit Cards

## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	101	<b>Unit Acres:</b>	96	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	198_106, 198_107	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	2,769 MBF
<b>TM-Compartment and Stand:</b>	2-121	<b>Volume Strata Acres:</b>	High 84 Medium 12 Low		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / Extend NFS Road (46021)

### Resource Concerns & Responses

#### Fish Habitat / Watershed

**Concern:** Streams 1 and 4 are Class III, channel type HC5.  
Streams 2, 3, and 5-7 are Class IV, channel type HC5.

**Response:** Streams 1 and 4: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a., 13.9, and 13.16.  
Streams 2, 3, and 5-7: Split yard away from class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 13.9, and 13.16.

#### Soils

**Concern:** Extreme hazard soils (MMI-4) along western boundary (14 acres) of the unit and at the bottom southeast section of unit (2 acres).

**Response:** Field survey by soil scientist determined 14 western acres as stable. Unit was designed to eliminate 2 acres at bottom southeast section. Use partial suspension in western section.

#### Wildlife/Biological Diversity

**Concern:** Large amount of high Volstrata present in unit. Red squirrel and black bear use reported in unit. 35 acres of medium (HSI 0.40 to 0.50) deer habitat value occurs in this unit. 78 acres of high value marten (HSI >0.89) habitat occurs within unit.

**Response:** Harvest would not isolate habitat by removing corridors linking low elevation habitat to high elevations.

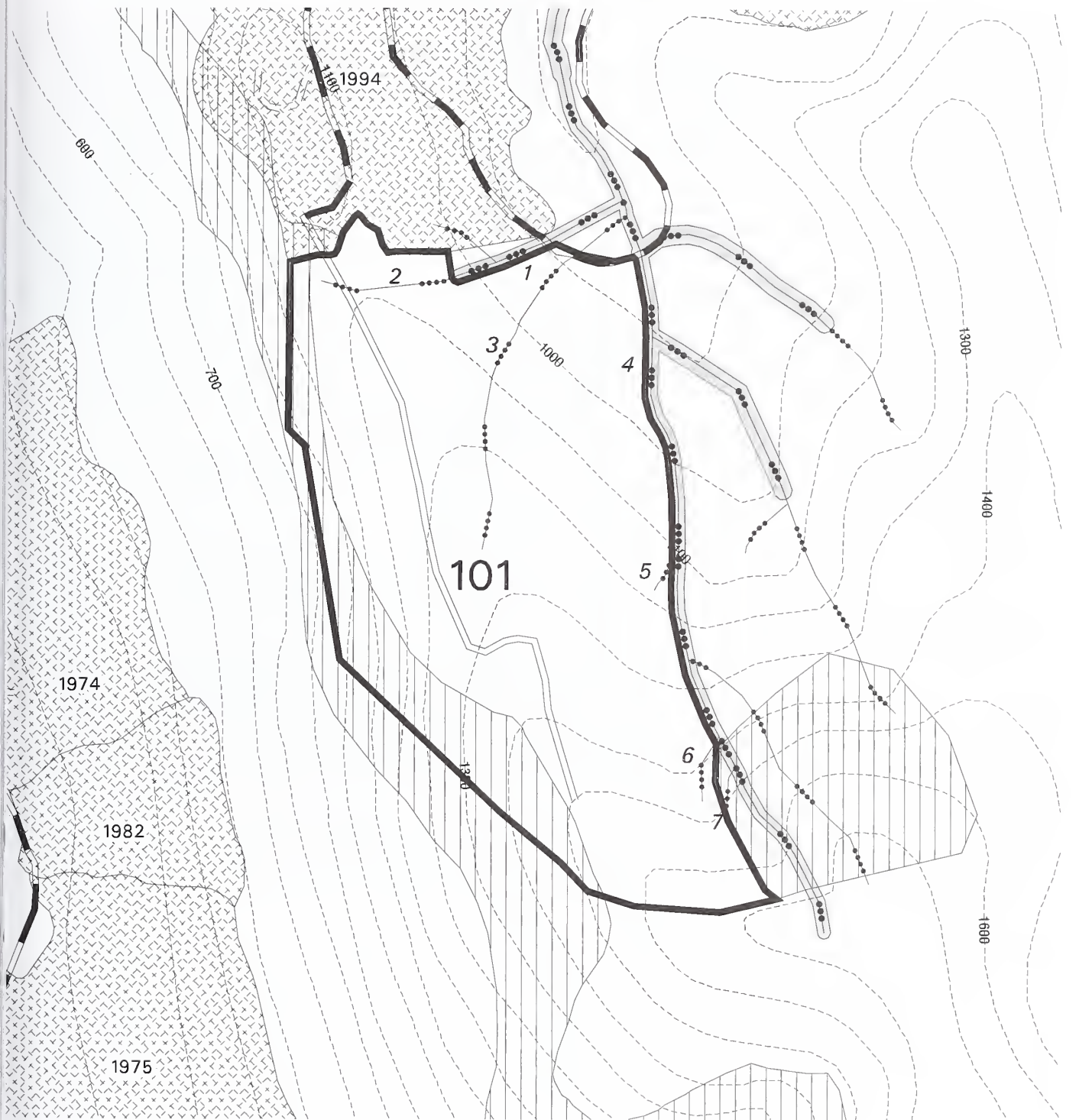
#### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

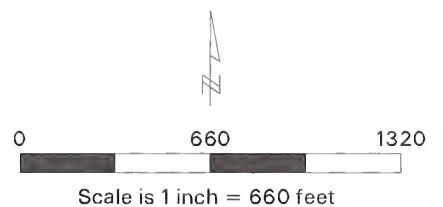
**Response:** During layout ensure harvest unit does not exceed 100 acres.

**No resource concerns for:** Scenery, Karst, Wetlands, Heritage

# Kuiu Unit 101 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 101 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	103c	<b>Unit Acres:</b>	20	<b>Alternatives:</b>	2
<b>1999 Aerial Photo:</b>	198_106, 198_107	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	555 MBF
<b>TM-Compartment and Stand:</b>	2-133	<b>Volume Strata Acres:</b>	High 17 Medium 3 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One existing NFS Road (46021)

## Resource Concerns & Responses

### Fish Habitat / Watershed

**Concern:** Stream 1 is Class III, Channel Type HC5.

Stream 2 is Class III, Channel Type HC2.

**Response:** Streams 1 and 2: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a., 13.9, and 13.16.

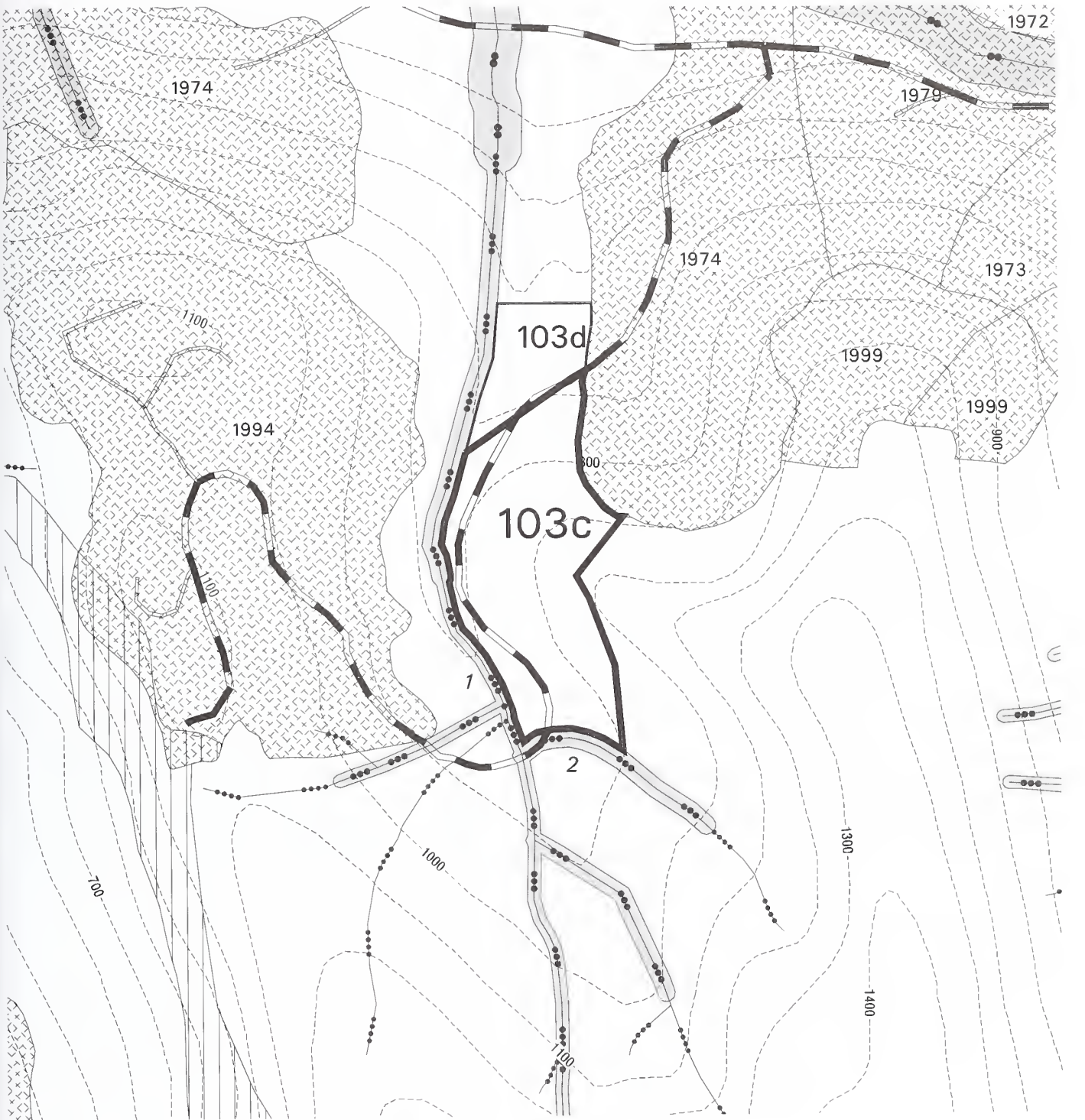
### Wildlife/Biological Diversity

**Concern:** Small unit size but large amount of high Volstrata within the unit. Less than one acre of high (HSI > 0.60), 15 acres of medium (HSI 0.40 to 0.50) deer habitat value occurs within this unit. 17 acres of high value marten (HSI > 0.89) habitat occurs within this unit.

**Response:** Clearcut prescription would remove all high Volstrata when unit is harvested. Harvest would not isolate habitat and no corridors that link low and high elevations would be harvested.

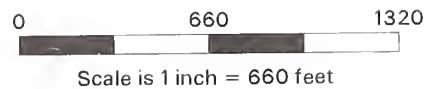
**No resource concerns for:** Scenery, Soils, Karst, Wetlands, Heritage, Vegetation

# Kuiu Unit 103c Alternative 2



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 103c Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



### Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	103d	<b>Unit Acres:</b>	5	<b>Alternatives:</b>	2
<b>1999 Aerial Photo:</b>	198_106, 198_107	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	158 MBF
<b>TM-Compartment and Stand:</b>	2-123	<b>Volume Strata Acres:</b>	High 5 Medium Low		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One existing NFS Road (46021)

### Resource Concerns & Responses

#### **Fish Habitat / Watershed**

**Concern:** Stream 1 is Class III, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a., 13.9, and 13.16.

#### **Wildlife/Biological Diversity**

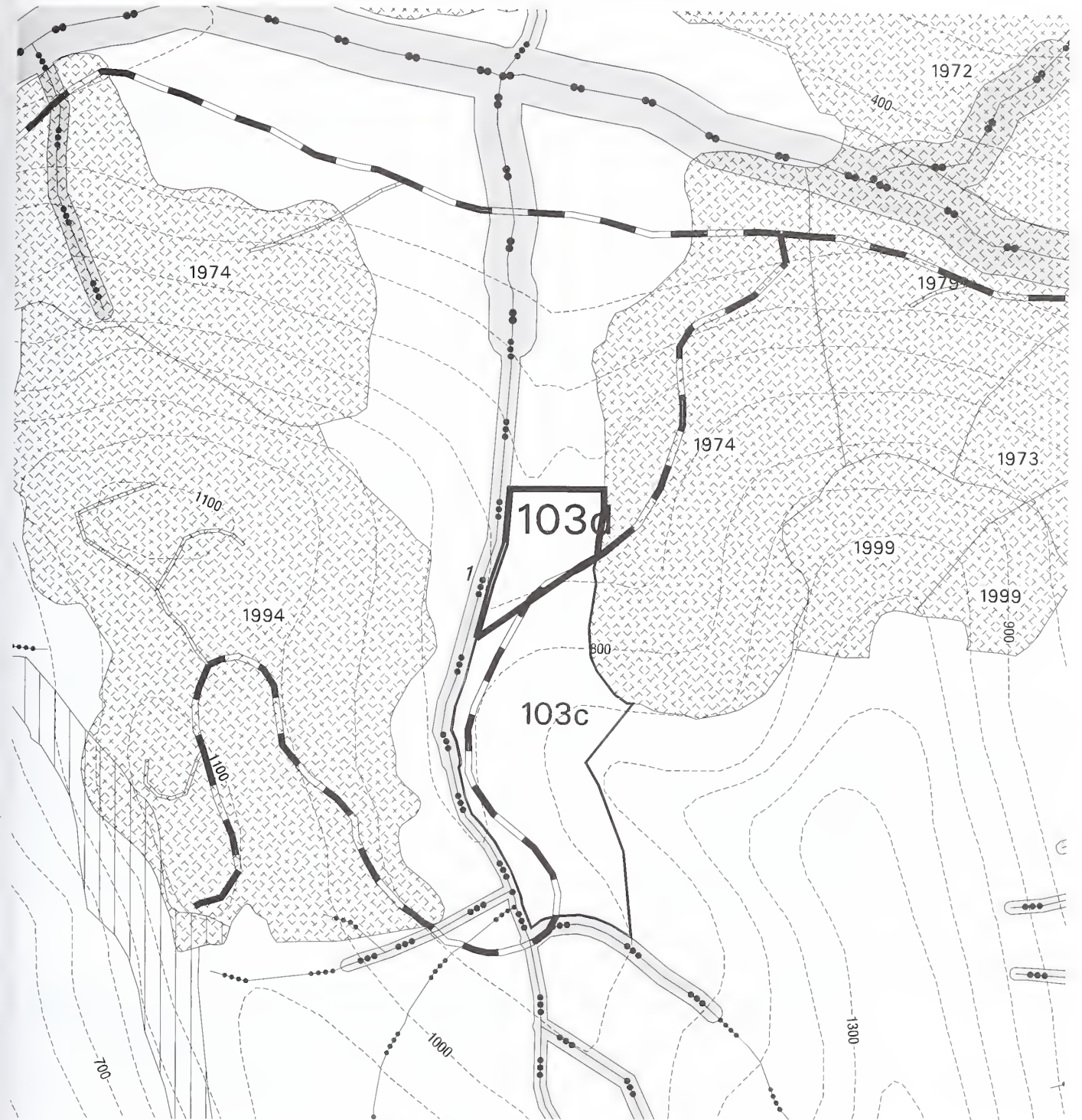
**Concern:** Small unit, large amount of high Volstrata within unit. One acre of high (HSI > 0.60), 4 acres of medium (HSI 0.40 to 0.50) deer habitat value occurs within this unit. 5 acres of high value marten (HSI >0.89) habitat value occurs within this unit.

**Response:** Clearcut prescription would remove all high Volstrata when unit is harvested. Harvest would not isolate habitat and no corridors would be removed that link low and high elevations.

**No resource concerns for:** Scenery, Soils, Karst, Wetlands, Heritage, Vegetation

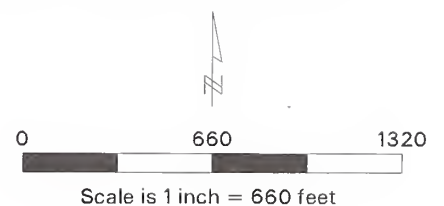


# Kuiu Unit 103d Alternative 2



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 103d Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	109	<b>Unit Acres:</b>	100	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	198_74, 198_75	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	2,063 MBF Alt 3 2,681 MBF Alt 4 & 5
<b>TM-Compartment and Stand:</b>	2-125	<b>Volume Strata Acres:</b>	High 79 Medium 14 Low 7		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 3 Two-aged management, 50% area retention, clearcut with reserves, 52 acres and even-aged management, clearcut, 48 acres.

Alt 4 and 5 Even-aged management, clearcut, 100 acres.

**Logging Method/ Transportation:** Cable / One temporary road, one new NFS Road (46034) and on reconditioned NFS Road (6417)

### Resource Concerns & Responses

#### Fish Habitat / Watershed

**Concern:** Stream 1 is Class I, Channel Type MM2.  
Stream 2 is Class II, Channel Type HC3.  
Stream 3 is Class III, Channel Type HC3.  
Streams 4 and 5 are Class IV, Channel Type HC5.  
Stream 6 is Class III, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater.  
Streams 3 and 6: No programmed commercial timber harvest within the RMA, which is defined as the V-notch.  
Streams 4 and 5: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities.  
All Streams: Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow potential

**Response:** Streams 1, 2, and 3: In Alt 3 some retention would be left along the stream buffer to protect against windthrow. In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.  
Stream 6: For Alts 3, 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

#### Wildlife/Biological Diversity

**Concern:** Large amount of high and medium Volstrata present in unit. 39 acres of high value deer habitat (HSI >0.60), 53 acres of medium value deer habitat (HSI 0.40 to 0.50) and 79 acres of high value marten habitat (HSI >0.89) occur within this unit. Unit is potentially a travel corridor for animals from high elevation to low elevation.

**Response:** Alternatives 4 and 5 prescribe clearcut harvest. This prescription would reduce habitat value and create large area of second growth. It would remove travel corridor between high elevation and low elevation and would isolate some higher elevation habitat. Alternative 3 prescribes uneven-aged management, which would mitigate removal of travel corridor for all but 48 acres within this unit.

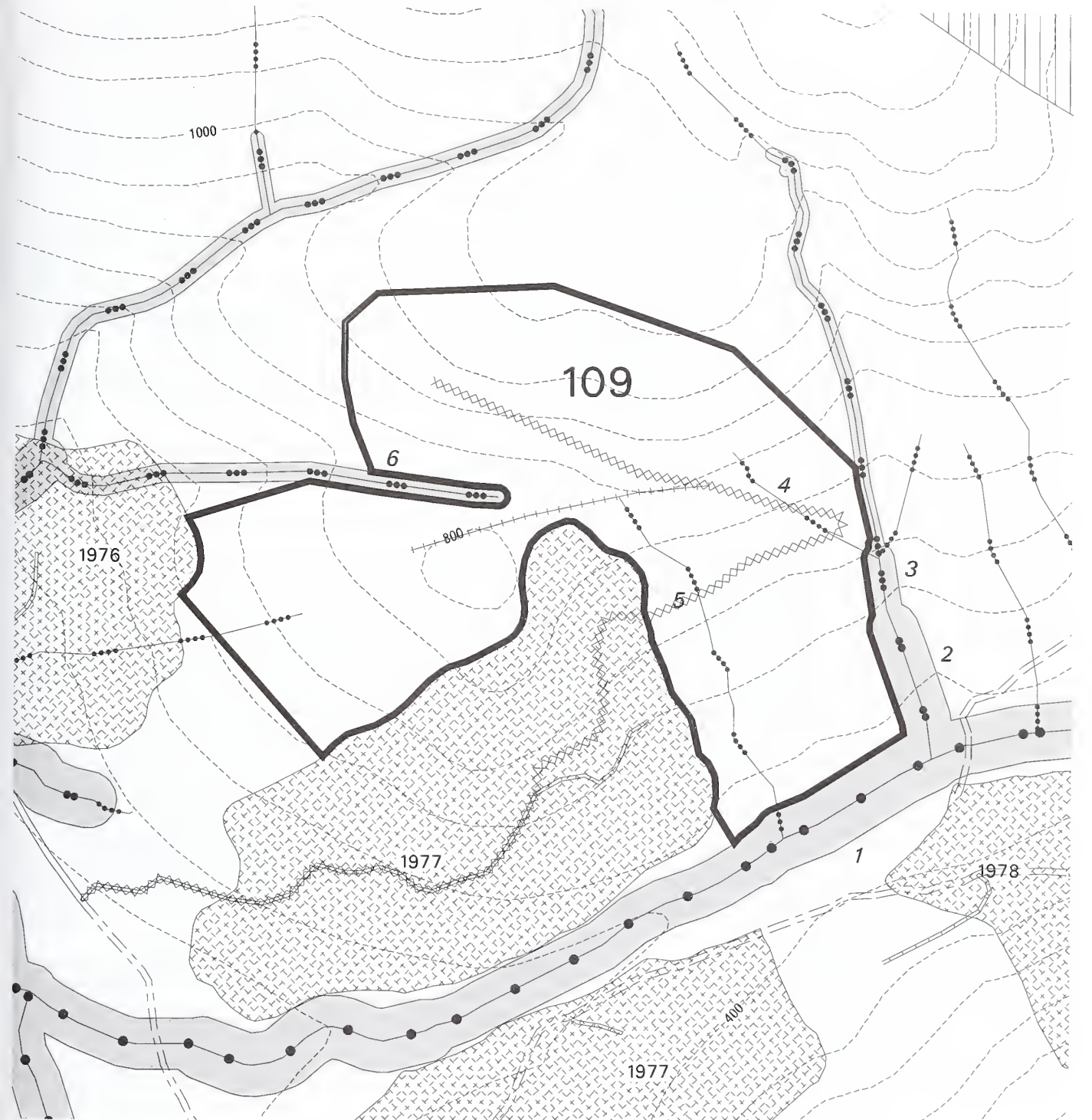
#### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

**Response:** During layout ensure harvest unit does not exceed 100 acres.

**No resource concerns for:** Scenery, Soils, Karst, Wetlands, Heritage

# Kuiu Unit 109 Alternative 3,4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 109 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |

0 660 1320  
 Scale is 1 inch = 660 feet

## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	109b	<b>Unit Acres:</b>	17	<b>Alternatives:</b>	2
<b>1999 Aerial Photo:</b>	198_74, 198_75	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	147 MBF
<b>TM-Compartment and Stand:</b>	2-125	<b>Volume Strata Acres:</b>	High 6 Medium 7 Low 4		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Two-Aged management clearcut with reserves-50% area retention above road, Uneven-aged management - Single Tree Selection -50% BA retention below the road.

**Logging Method/ Transportation:** Cable / One new NFS Road (46034) and one reconditioned NFS Road (6417)

## Resource Concerns & Responses

### Fish Habitat / Watershed

**Concern:** Stream 1 is Class I, Channel Type MM2.  
Stream 2 is Class II, Channel Type HC3.  
Stream 3 is Class III, Channel Type HC3  
Streams 4 and 5 are Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 4 and 5: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

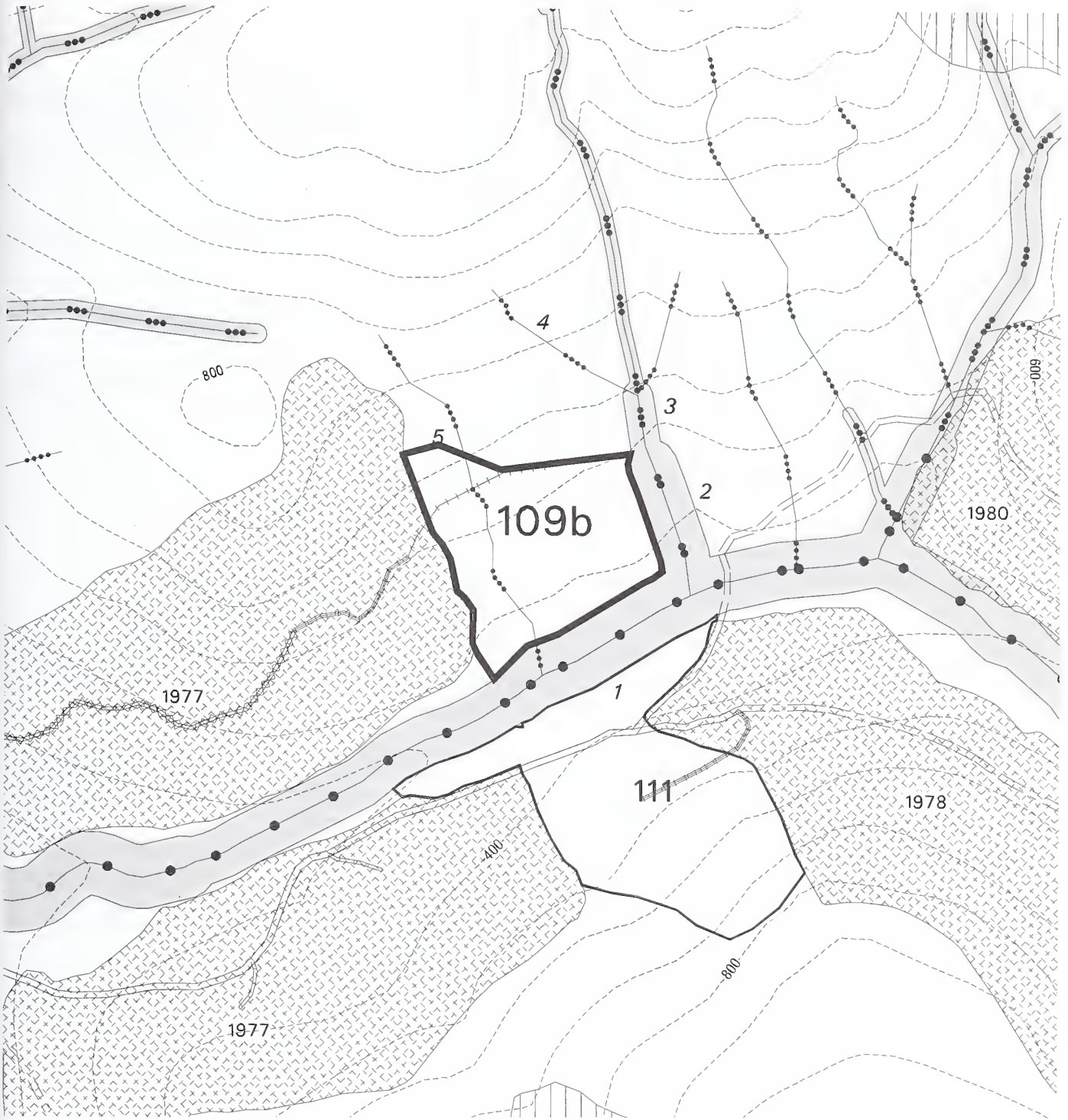
**Concern:** High Volstrata present in unit. 5 acres high value (HSI >0.60), 7 acres of medium value (HSI 0.4 to 0.5) deer habitat occurs within this unit. 5 acres high value marten (HSI >0.89) habitat occurs within this unit. Area is a potential travel corridor from high elevation habitat to low elevation habitat.

**Response:** 50% basal area retention and small size of the unit would mitigate impacts to potential animal use. This treatment would reduce travel corridor between high elevation and low elevation but would not isolate higher elevation habitat because of prescription.

**No resource concerns for:** Scenery, Soils, Karst, Wetlands, Heritage, Vegetation

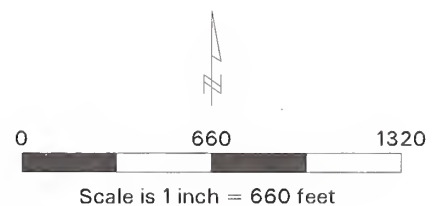


# Kuiu Unit 109b Alternative 2



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 109b Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	111	<b>Unit Acres:</b>	24	<b>Alternatives:</b>	2, 4, 5
<b>1999 Aerial Photo:</b>	198_74, 298_127	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	161 MBF Alt 2 321 MBF Alt 4 & 5
<b>TM-Compartment and Stand:</b>	2-126	<b>Volume Strata Acres:</b>	High 8 Medium 16 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** **Alt 2** Two Aged Management - 50% area retention, clearcut with reserves

**Alt 4 and Alt 5** Even-aged management, clearcut, 24 acres

**Logging Method/ Transportation:** Cable / One temporary road and two reconditioned NFS Roads (6417 and 6443)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class I, Channel Type MC2/MM1.

**Response:** Stream 1, MC2 section: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the channel, or to the top of the side-slope break, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 1 MM1 section: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

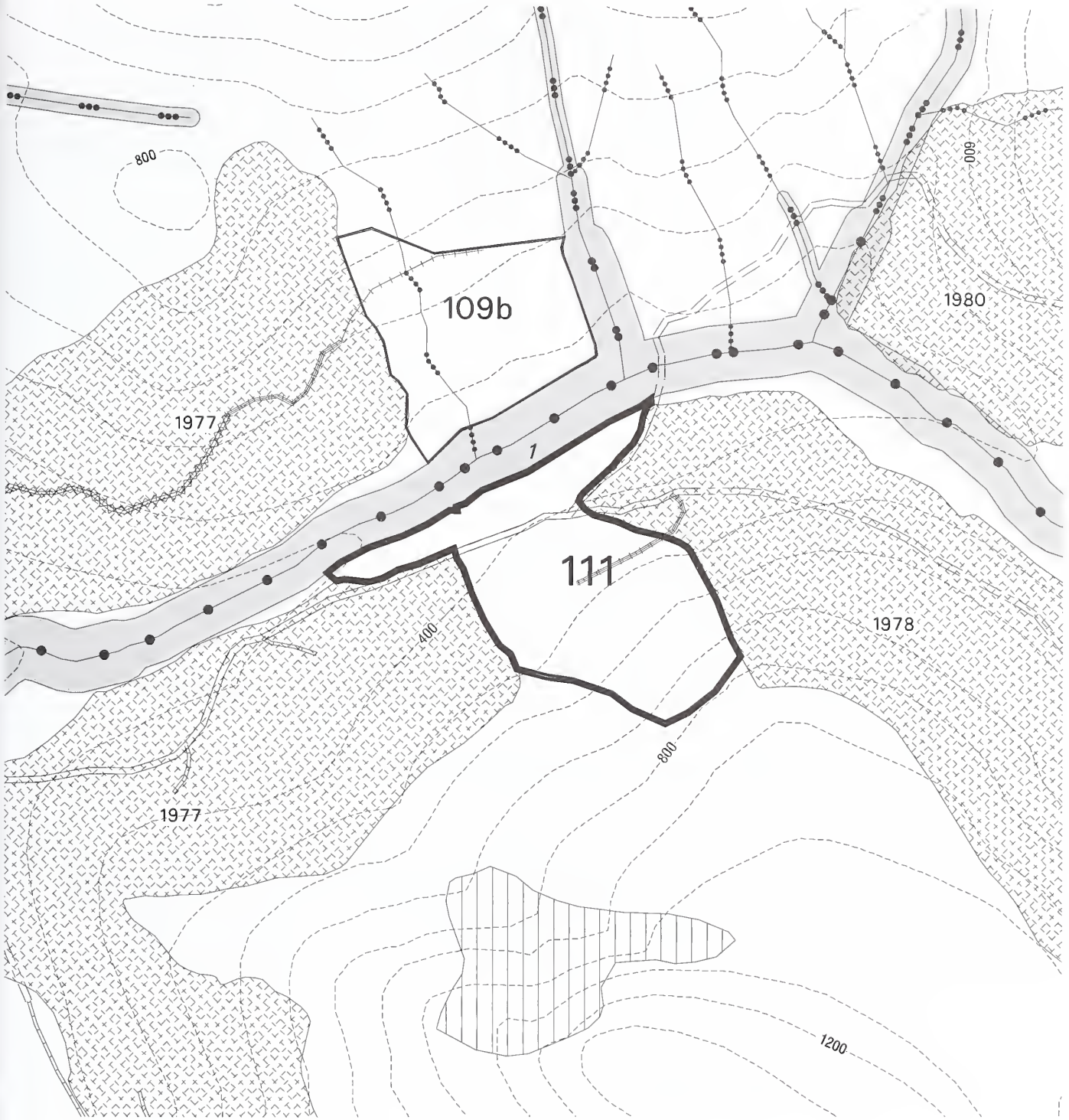
### Wildlife/Biological Diversity

**Concern:** Only high and medium Volstrata present. This area was identified as a wildlife corridor by the IDT. 8 acres of medium value (HSI 0.40 to 0.50) deer habitat and 8 acres of high value marten (HSI >0.89) habitat are within this unit.

**Response:** Two-aged management and small size of the unit in Alt 2 would mitigate potential impacts to animal habitat. Alts 4 & 5 would reduce habitat value and create a large area of second growth. Alternative 2 would maintain travel corridor between high elevation and low elevation. Alternatives 4 and 5 would remove this corridor link between high and low elevations.

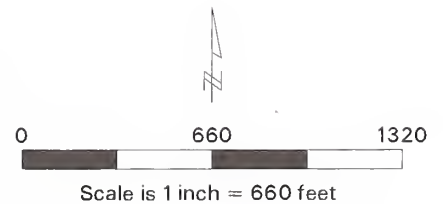
**No resource concerns for:** Scenery, Soils, Karst, Wetlands, Heritage, Vegetation

# Kuiu Unit 111 Alternative 2,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 111 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	112	<b>Unit Acres:</b>	22	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	198_77, 298_124	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	352 MBF Alt 3 705 MBF Alt 4 & 5
<b>TM-Compartment and Stand:</b>	3-126	<b>Volume Strata Acres:</b>	High 22 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 3 Two-aged management - 50% area retention, clearcut with reserves  
Alt 4 and Alt 5 Even-aged management, clearcut.

**Logging Method/ Transportation:** Cable / One existing NFS Road (6418)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC3.  
Streams 2 and 3 are Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2 and 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

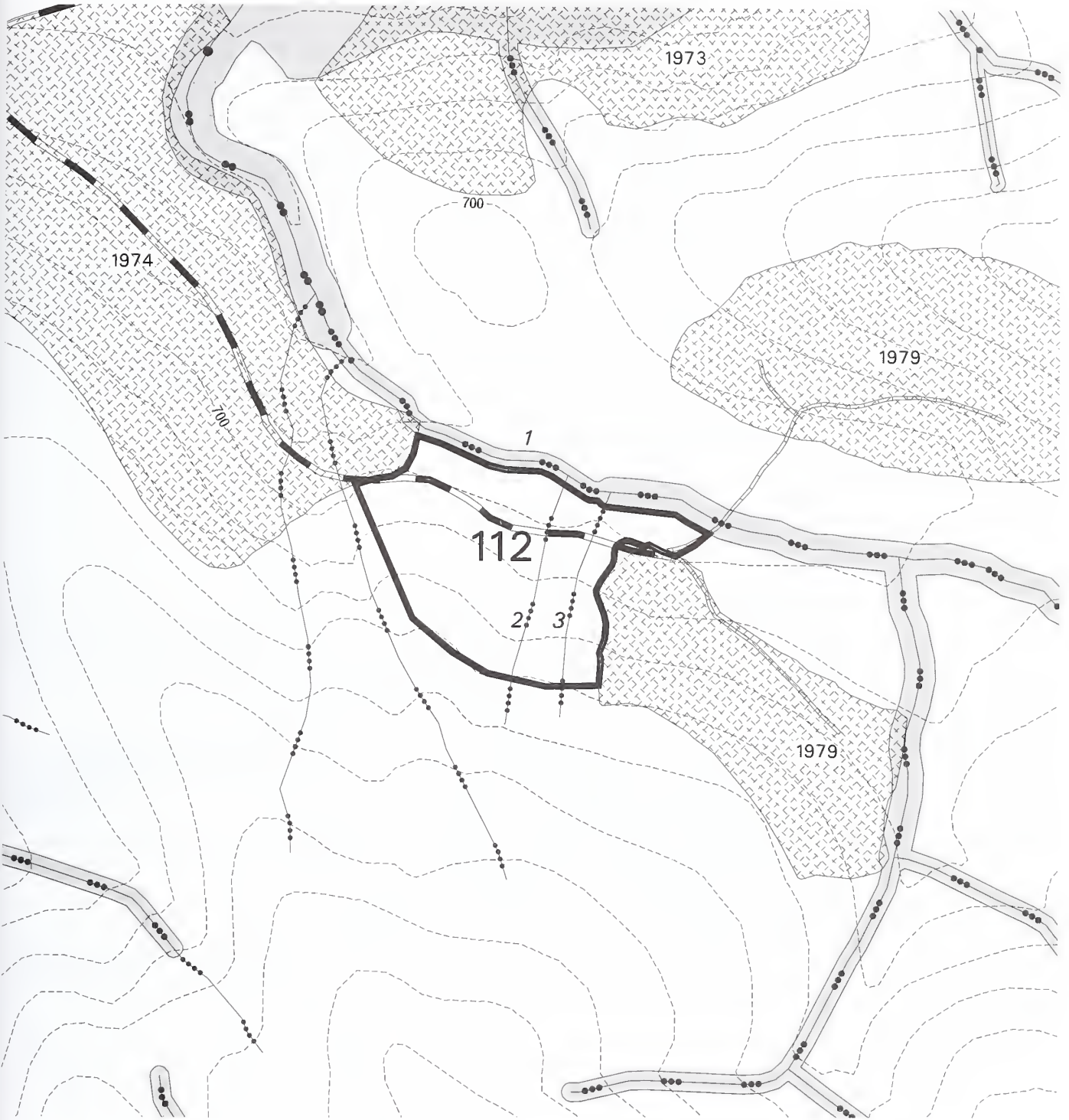
**Concern:** Deer, bear and cavity nesting use, only high Volstrata present in unit. 14 acres of medium value (HSI 0.40 to 0.50) deer habitat and 22 acres of high value marten (HSI >0.89) habitat are within this unit.

**Response:** Two-aged management in Alt 3 and small size of unit would mitigate impacts. Alts 4 and 5 would reduce habitat value and create large area of second growth. Alt 3 would maintain a travel corridor between high elevation and low elevation. Alts 4 and 5 would remove the corridor.

**No resource concerns for:** Scenery, Soils, Wetlands, Karst, Heritage, Vegetation

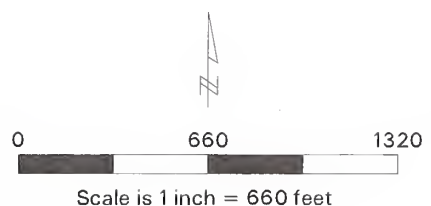


# Kuiu Unit 112 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 112 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	204	<b>Unit Acres:</b>	69	<b>Alternative:</b>	3
<b>1999 Aerial Photo:</b>	598_130, 598_131	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	627 MBF
<b>TM-Compartment and Stand:</b>	3-127	<b>Volume Strata Acres:</b>	High 35 Medium 34 Low 2		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 3 Two-aged management - 50% area retention, clearcut with reserves

**Logging Method/ Transportation:** Cable / One temporary road and two new NFS Roads (46032 and 46033)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC6.  
Stream 2 is Class IV, Channel Type HC5.  
Stream 3 is Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6, 13.9, and 13.16.  
Streams 2 and 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

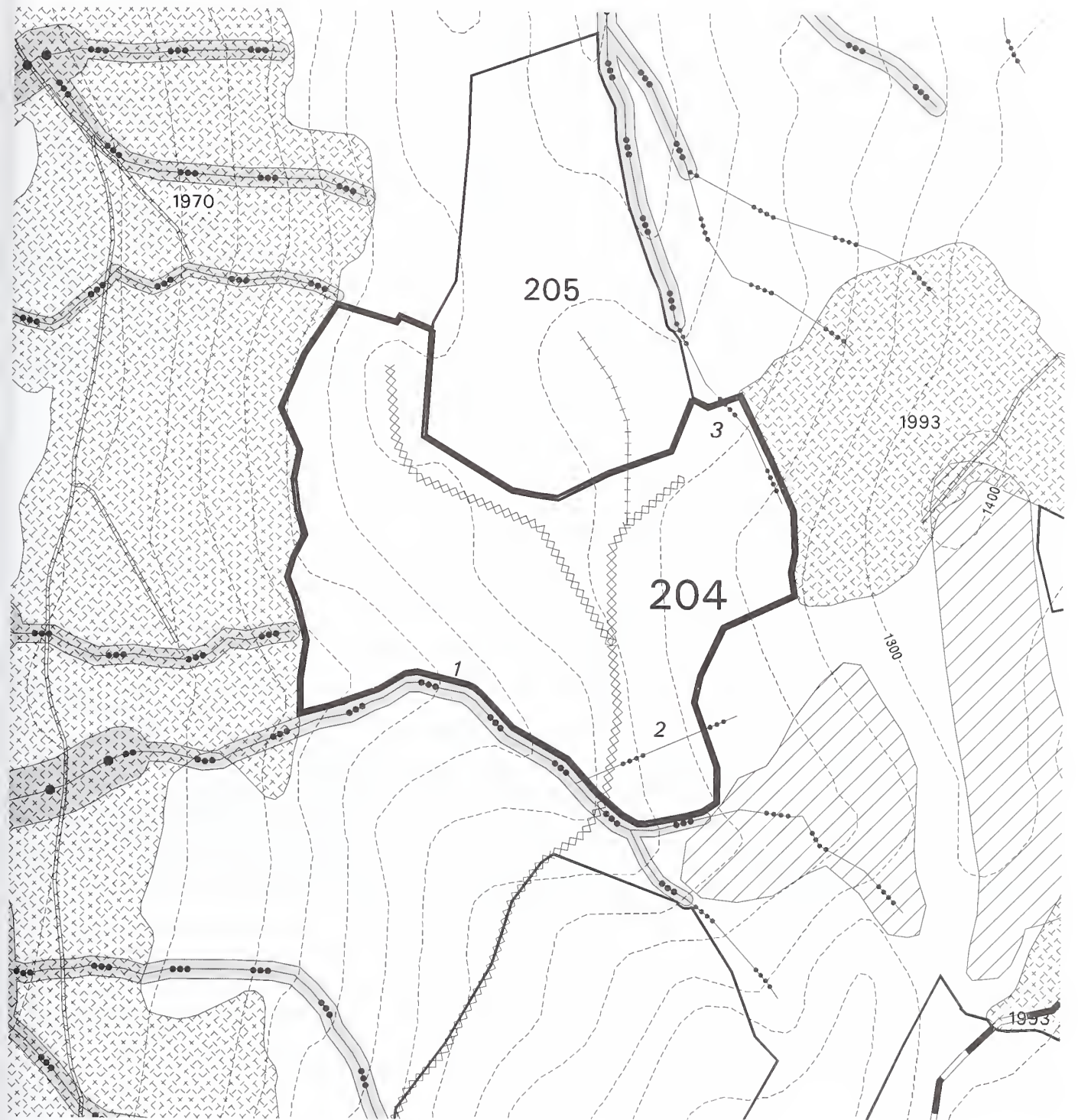
### Wildlife/Biological Diversity

**Concern:** Large amount of high and medium Volstrata reported in this unit. 14 acres of high value (HSI >0.60), 24 acres of medium value (HSI 0.40 to 0.50) deer habitat and 35 acres of high value marten (HSI >0.89) habitat are located within this unit.

**Response:** Two-aged management prescriptions in Alternative 3 would mitigate the harvest of high and medium Volstrata and deer and marten habitat values within the unit. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

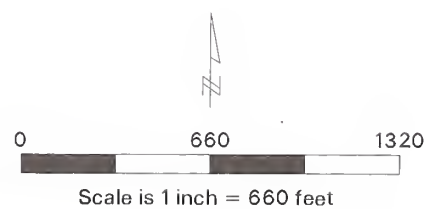
**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage, Vegetation

# Kuiu Unit 204 Alternative 3



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 204 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	204	<b>Unit Acres:</b>	59	<b>Alternative:</b>	5
<b>1999 Aerial Photo:</b>	598_130, 598_131	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,027 MBF
<b>TM-Compartment and Stand:</b>	3-127	<b>Volume Strata Acres:</b>	High 28 Medium 30 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 5 Even-aged Management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road and two new NFS Roads (46032 and 46033)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC6  
Stream 2 is Class IV, Channel Type HC5  
Stream 3 is Class IV, Channel Type HC5

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2 and 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

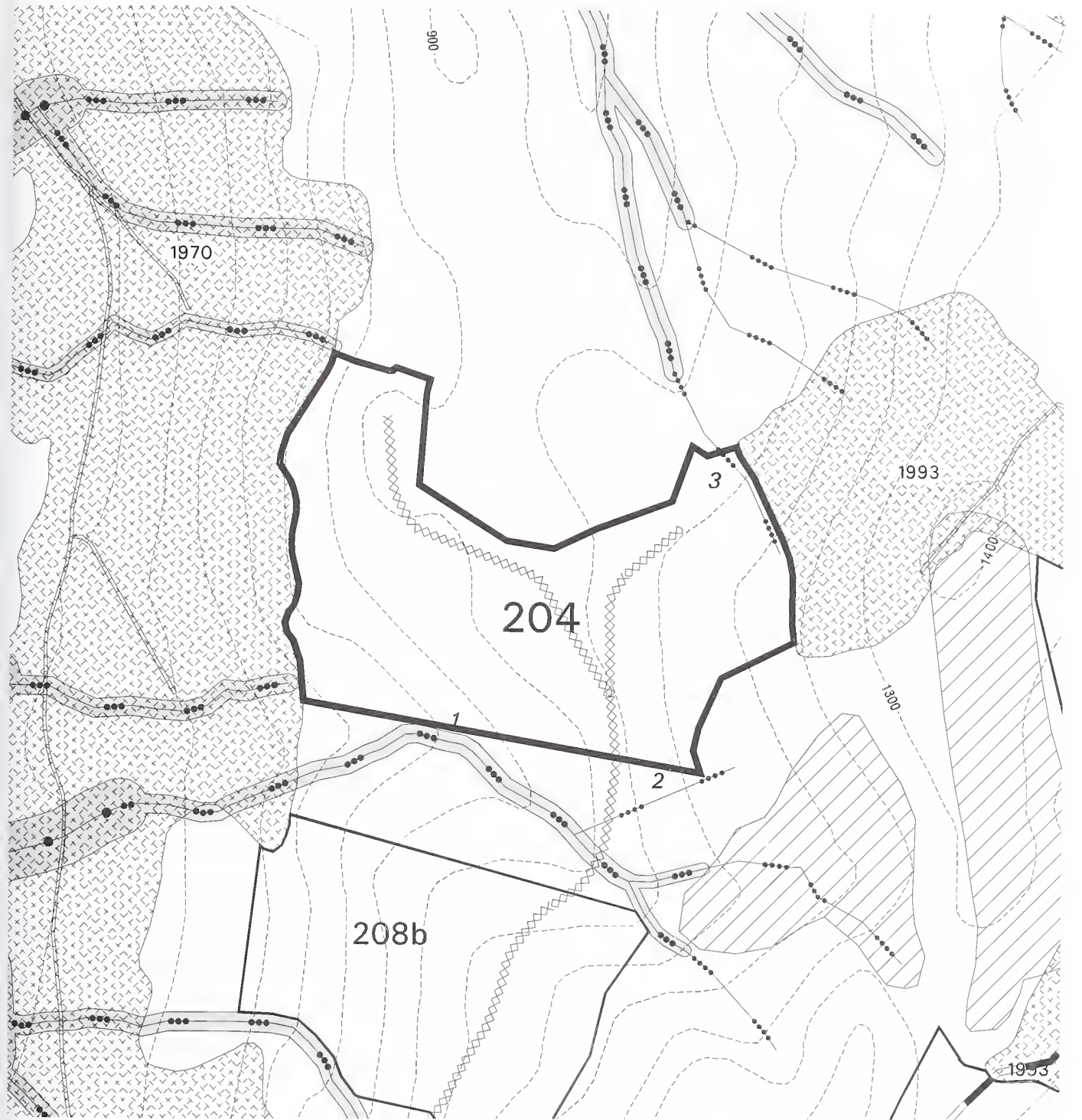
**Concern:** Large amount of high and medium Volstrata reported in this unit. 14 acres of high value deer habitat (HSI >0.60), 24 acres of medium value deer habitat (HSI 0.40 to 0.50) and 35 acres of high value marten habitat (HSI >0.89) are located within this unit.

**Response:** Clearcut harvest in Alt 5 would remove all old-growth habitat and reduce deer and marten habitat values. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

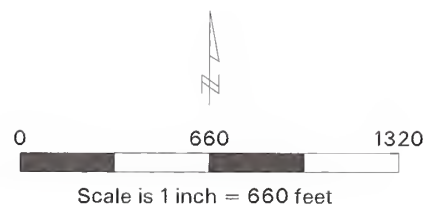
**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage, Vegetation



# Kuiu Unit 204 Alternative 5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 204 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	205	<b>Unit Acres:</b>	39	<b>Alternatives:</b>	3
<b>1999 Aerial Photo:</b>	598_130, 598_131	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	425 MBF
<b>TM-Compartment and Stand:</b>	3-128	<b>Volume Strata Acres:</b>	High 9 Medium 18 Low 12		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC6

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

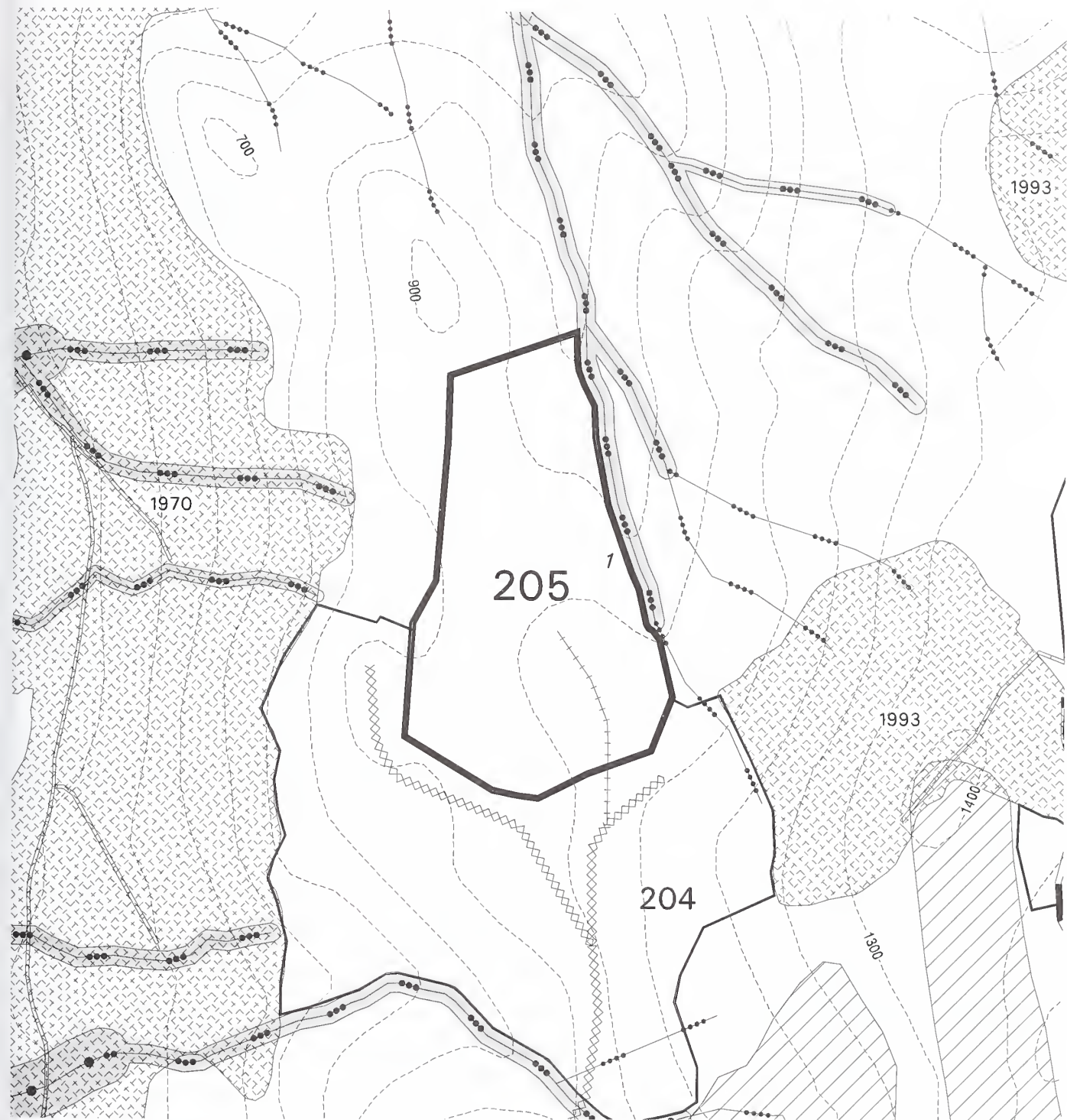
### Wildlife/Biological Diversity












**Concern:** High, medium and low Volstrata located within unit. 1 acre of high value deer habitat (HSI >0.60), 4 acres of medium value deer habitat (HSI 0.40 to 0.50) and 9 acres of high value marten habitat (HSI >0.89) are located within the unit.








**Response:** Clearcut harvest would remove all old-growth habitat and reduce marten and deer habitat values. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

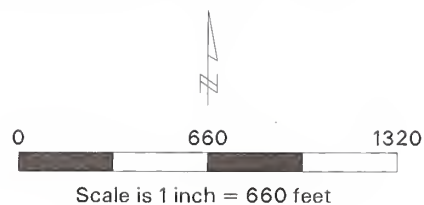
**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage, Vegetation

# Kuiu Unit 205 Alternative 3



-  Existing Managed Stands
-  Riparian Management Area
-  Forest Plan Old-Growth Reserve
-  Extreme Hazard Soils
-  High Hazard Soils
-  Proposed Unit 205 Boundary
-  Adjacent Proposed Units
-  Stream Value Class I
-  Stream Value Class II
-  Stream Value Class III
-  Stream Value Class IV

-  Open NFS Roads
-  Closed NFS Roads
-  Decommissioned Roads
-  Proposed NFS Roads
-  Reconditioned Roads
-  Proposed Temporary Roads
-  100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	207	<b>Unit Acres:</b>	62	<b>Alternatives:</b>	2, 4, 5
<b>1999 Aerial Photo:</b>	598_100, 598_101	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,004 MBF Alts 2, 4 1,927 MBF Alt 5
<b>TM-Compartment and Stand:</b>	3-129	<b>Volume Strata Acres:</b>	High 59 Medium 3 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 2 and 4 Two-aged management - 50% area retention, clearcut with reserves 52 acres, even-aged management clearcut 10 acres

Alt 5 Even-aged management, clearcut

**Logging Method/ Transportation:** Cable and Shovel logging / One existing NFS Road (46096)

### Resource Concerns & Responses

#### Fish Habitat/Watershed

**Concern:** Streams 1, 2, 4, 5, and 6 are Class IV, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC6.

**Response:** Streams 1, 2, 4, 5, and 6: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes stand susceptible to windthrow.

**Response:** Stream 3: In Alts 2 and 4 some retention would be left along the stream buffer to protect against windthrow. In Alt 5 the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

#### Soils/Wetlands

**Concern:** Initial concerns were for extreme hazard soils (MMI-4) in proposed unit and for protection of high value sedge fen at bottom of unit.

**Response:** Unit boundary was designed to avoid extreme hazard soils (MMI-4) from harvest which should also provide protection for high value sedge fen. No further concerns.

#### Wildlife/Biological Diversity

**Concern:** A large amount of high Volstrata is located in this unit (50 acres). 1 acre of high value deer habitat (HSI >0.60), 12 acres of medium value deer habitat (HSI 0.40 to 0.50) and 58 acres of high value marten habitat (HSI >0.89) are within the unit.

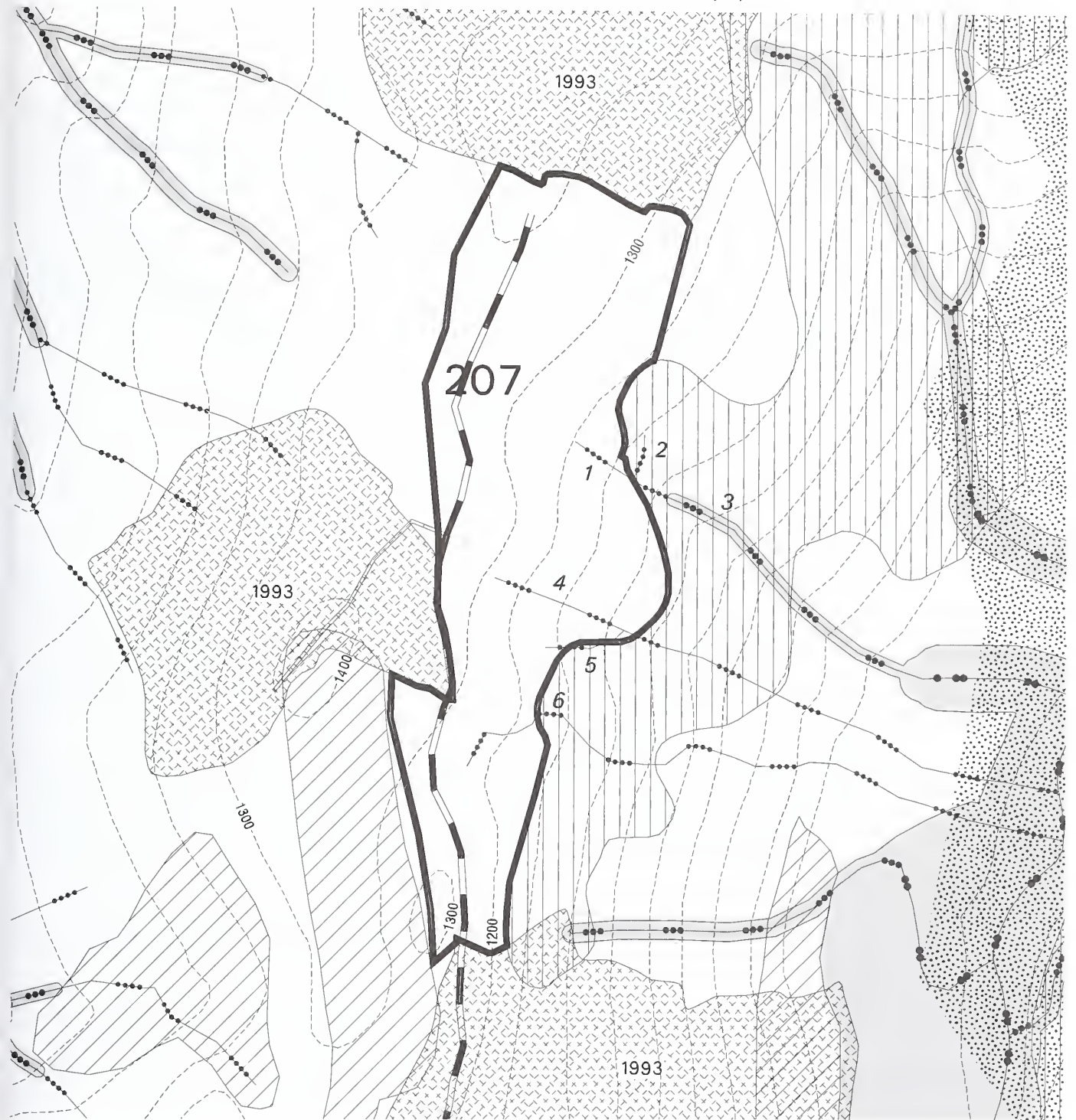
**Response:** Alts 2 and 4 were designed to retain a wildlife travel corridor. 50% area retention prescriptions would mitigate the harvest of high Volstrata and marten habitat within the unit. Harvest would not isolate habitat and no corridors would be removed between low and high elevations.

Alt 5 would remove all old-growth habitat within the unit through clearcut harvest. This would isolate and remove travel corridors between high and low elevations.

**No resource concerns for:** Karst, Wetlands, Scenery, Heritage, Vegetation

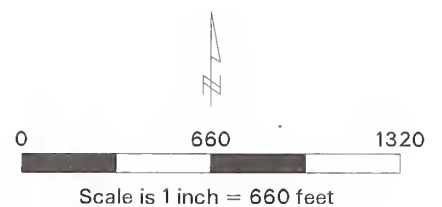


# Kuiu Unit 207 Alternative 2,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 207 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	207	<b>Unit Acres:</b>	52	<b>Alternatives:</b>	3
<b>1999 Aerial Photo:</b>	598_100, 598_101	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	825 MBF
<b>TM-Compartment and Stand:</b>	3-129	<b>Volume Strata Acres:</b>	High 50 Medium 2 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Two-aged management - 50% area retention, clearcut with reserves, 49 acres and even-aged management, clearcut, 3 acres

**Logging Method/ Transportation:** Cable and Shovel logging / One existing NFS Road (46096)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1, 2, 4, 5, and 6 are Class IV, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC6.

**Response:** Streams 1, 2, 4, 5, and 6: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Soils

**Concern:** Initial concerns were for extreme hazard soils (MMI-4) in proposed unit and for protection of high value sedge fen at bottom of unit.

**Response:** Unit boundary was designed to exclude extreme hazard soils (MMI-4) from harvest which should also provide protection for high value sedge fen. No further concerns.

### Wildlife/Biological Diversity

**Concern:** This prescription was designed to retain a wildlife travel corridor. A large amount of high Volstrata is located in this unit. 1 acre of high value deer habitat (HSI >0.60), 12 acres of medium value deer habitat (HSI 0.40 to 0.50) and 58 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** 50% area retention prescriptions would mitigate the harvest of high Volstrata and marten habitat within the unit. Harvest is not expected to isolate habitat and no corridors would be removed.

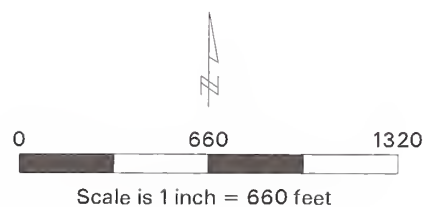
**No resource concerns for:** Karst, Wetlands, Scenery, Heritage, Vegetation

# Kuiu Unit 207 Alternative 3



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 207 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

Unit Number:	208	Unit Acres:	97	Alternatives:	3
1999 Aerial Photo:	598_99, 598_100	Land Use Designation:	Timber Production	Net Timber Volume:	2,953 MBF
TM-Compartment and Stand:	3-130	Volume Strata Acres:	High 96 Medium 1 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46032)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC5.  
Stream 4 is Class III, Channel Type HC6.

**Response:** Stream 1: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 3 and 4: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

**Concern:** Wolf den found in unit in 2003 monitored 2003 – 2005. No activity noted 2004 or 2005. Large amount of high Volstrata reported in this unit. 5 acres of high value deer habitat (HSI >0.60), 78 acres of medium value deer habitat (HSI 0.40 to 0.50) and 96 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Buffer was placed around den, eastern edge of unit boundary moved to exclude den and buffer. Clearcut harvest would remove all old-growth habitat and reduce deer and marten habitat values. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

**Response:** During layout ensure harvest unit does not exceed 100 acres.

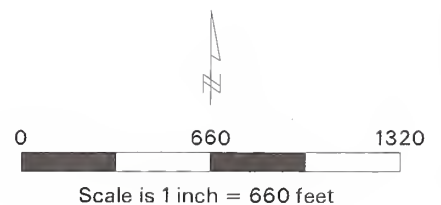
**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage



# Kuiu Unit 208 Alternative 3



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decomissioned Roads      |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 208 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	208	<b>Unit Acres:</b>	98	<b>Alternatives:</b>	4
<b>1999 Aerial Photo:</b>	598_99, 598_100	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	3,385 MBF
<b>TM-Compartment and Stand:</b>	3-130	<b>Volume Strata Acres:</b>	High 95 Medium 3 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut, 98 acres

**Logging Method/ Transportation:** Cable / One new NFS Road (46032)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC5.

**Response:** Stream 1: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of stream courses. Remove any slash deposited in stream course as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

**Concern:** Wolf den found in unit in 2003 monitored 2003 – 2005. No activity noted 2004 or 2005. Large amount of high Volstrata reported in this unit. 5 acres of high value deer habitat (HSI >0.60), 78 acres of medium value deer habitat (HSI 0.40 to 0.50) and 96 acres of high value marten habitat (HSI >0.89) habitat are within the unit.

**Response:** Buffer was placed around den, eastern edge of unit boundary moved to exclude den and buffer. Clearcut harvest would remove all old-growth habitat and reduce deer and marten habitat values. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

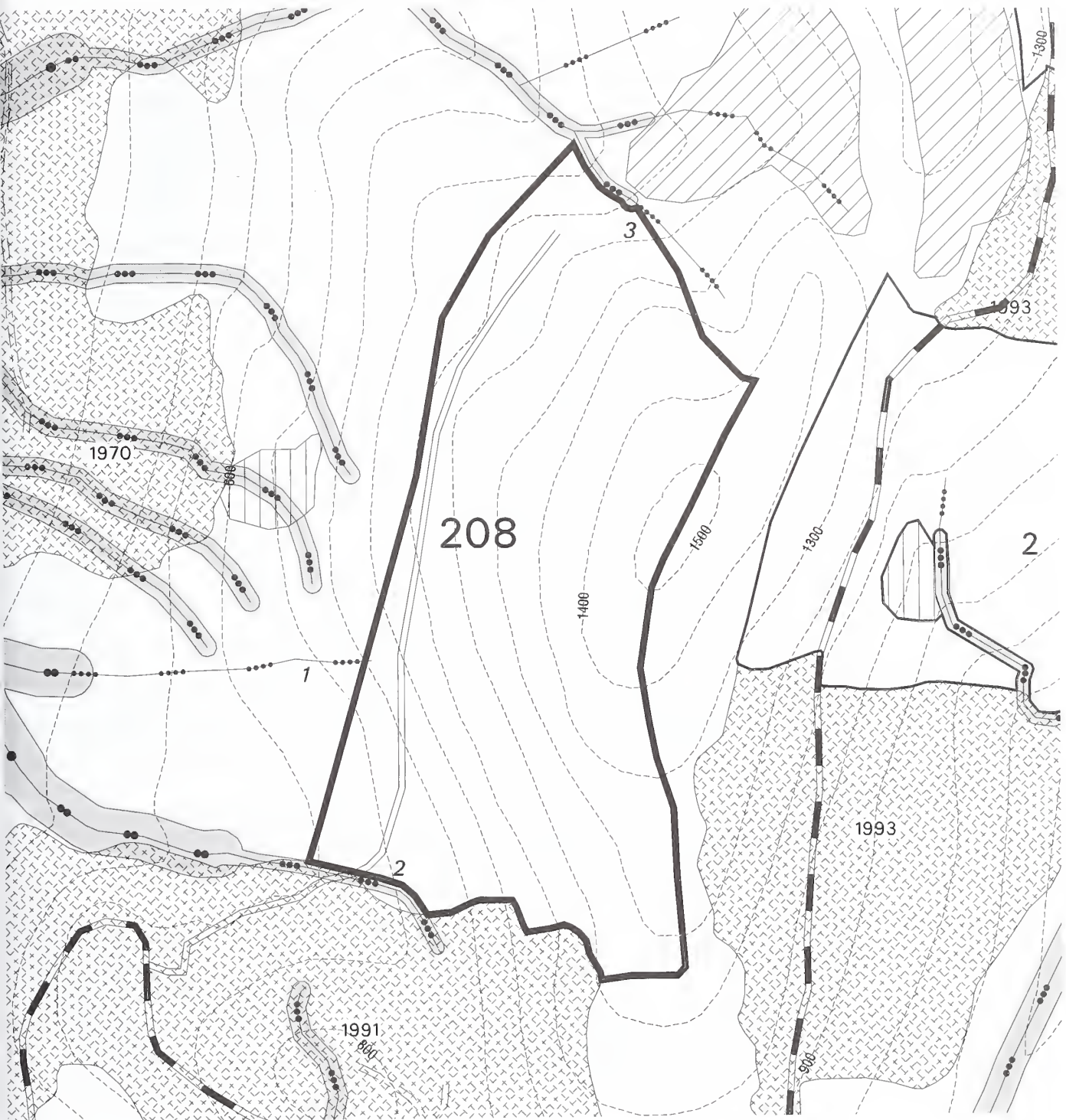
### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

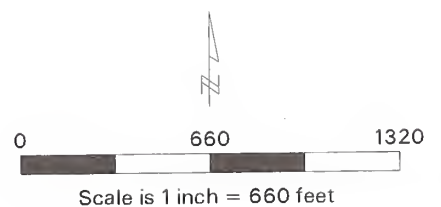
**Response:** During layout ensure harvest unit does not exceed 100 acres.

**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage

# Kuiu Unit 208 Alternative 4



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreation River Corridor      |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 208 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	208a	<b>Unit Acres:</b>	43	<b>Alternatives:</b>	2, 5
<b>1999 Aerial Photo:</b>	598_99, 598_100	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	864 MBF
<b>TM-Compartment and Stand:</b>	3-130	<b>Volume Strata Acres:</b>	High 25 Medium 18 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46032)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC5.  
Stream 2 is Class II, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC5.

**Response:** Stream 1: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

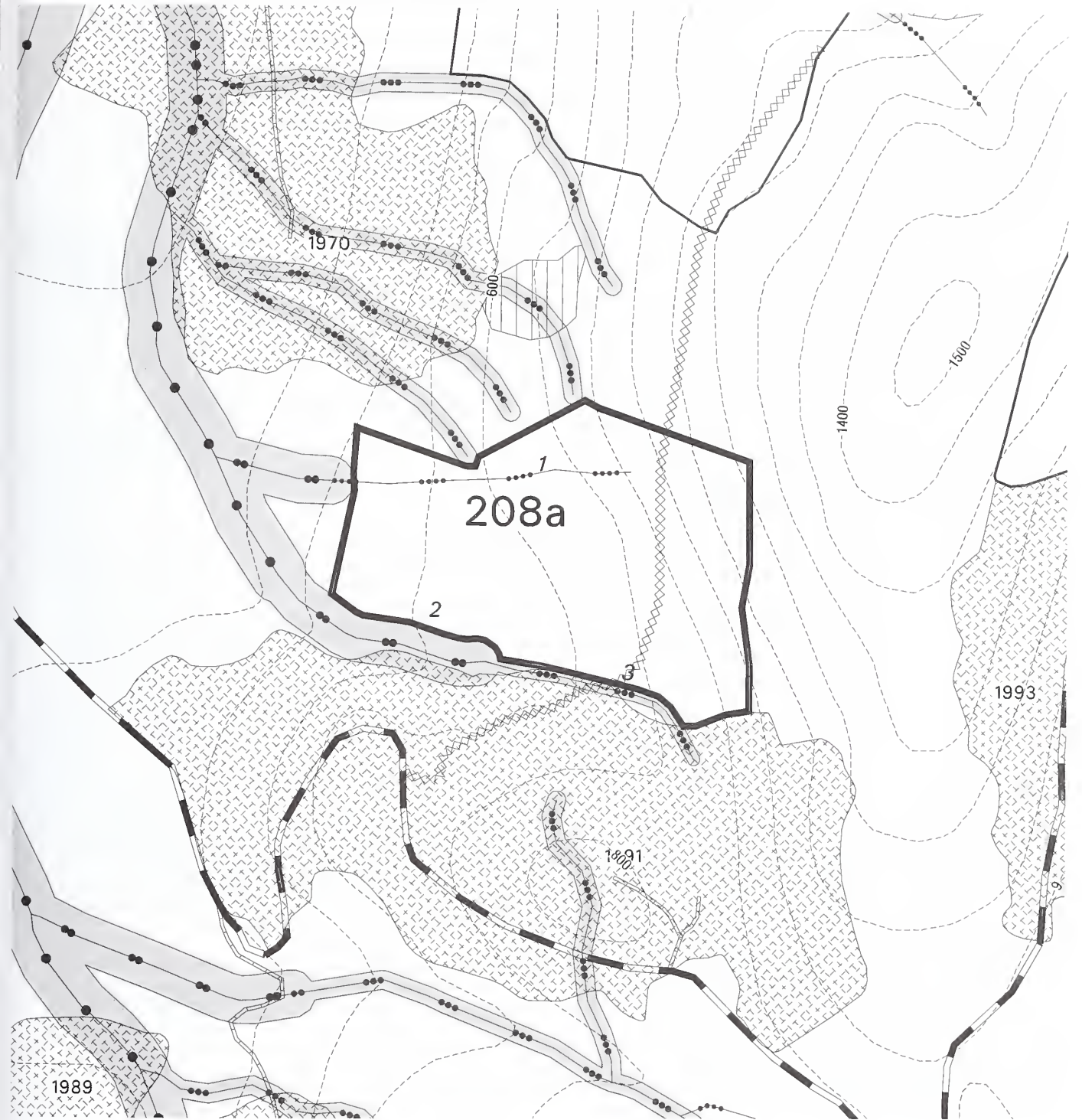
**Concern:** Wolf den found in 2003 and monitored 2003-2005. No activity noted 2004-2005. Large amount of high and medium Volstrata reported in this unit. 9 acres of high value deer habitat (HSI >0.60), 15 acres of medium value deer habitat (HSI 0.40 to 0.50) and 24 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Wolf den buffer prescribed for site. Unit split on both sides of den and buffer area. Clearcut prescription will remove all old-growth habitat and reduce the deer and marten habitat values when unit is harvested. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

**No resource concerns for:** Karst, Wetlands, Soils, Scenery, Heritage, Vegetation

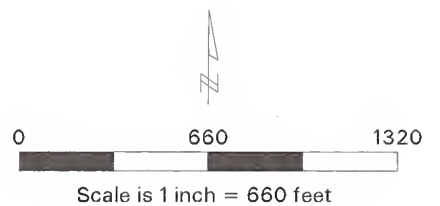


# Kuiu Unit 208a Alternative 2,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 208a Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	208b	<b>Unit Acres:</b>	51	<b>Alternative:</b>	2
<b>1999 Aerial Photo:</b>	598_100, 598_101	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,621 MBF
<b>TM-Compartment and Stand:</b>	3-131	<b>Volume Strata Acres:</b>	High 49 Medium 2 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46032)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC5.

**Response:** Stream 1: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

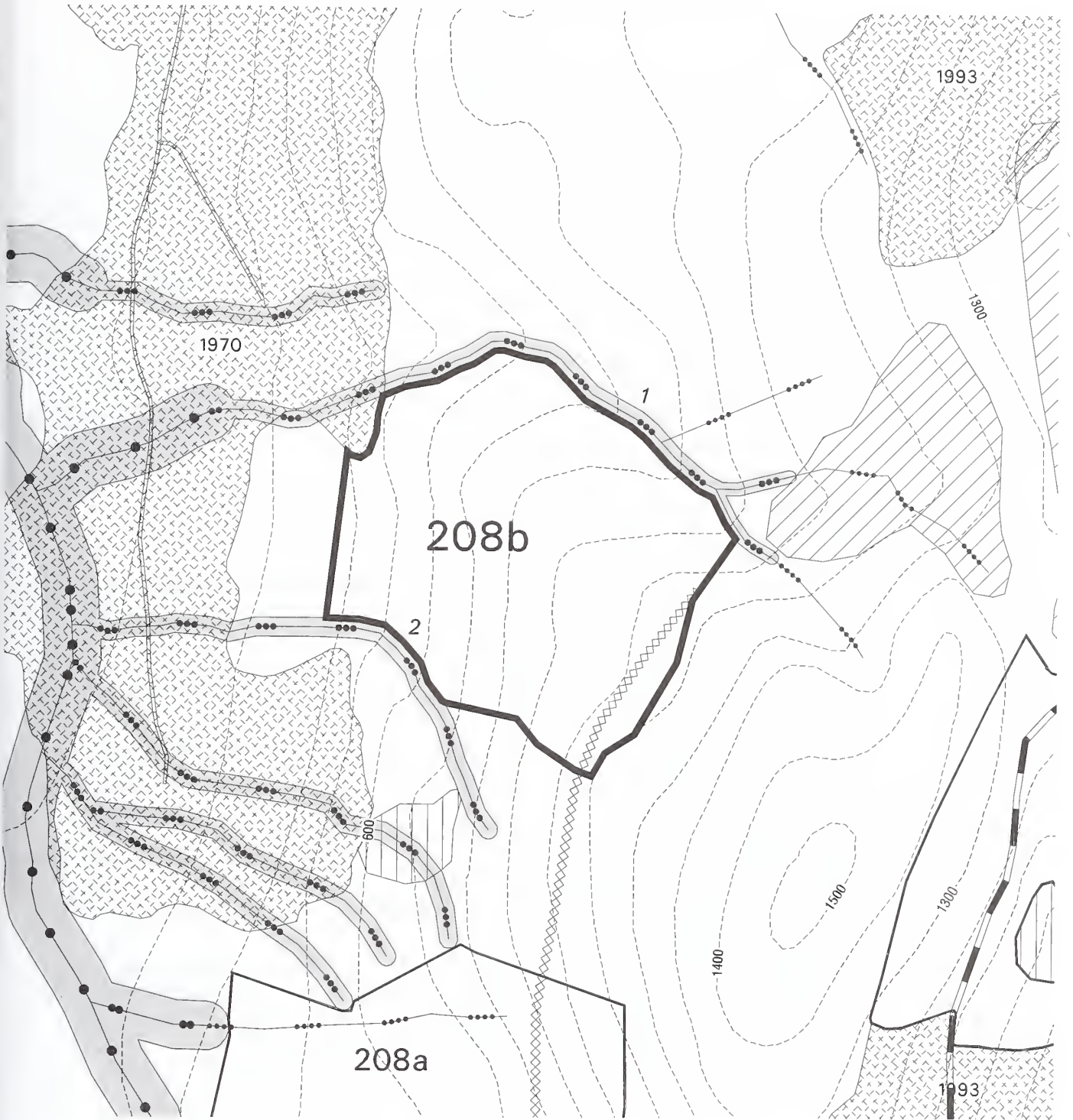
### Wildlife/Biological Diversity

**Concern:** Wolf den found 2003 and monitored 2003-2005. No activity noted 2004-2005. Large amount of high Volstrata reported in this unit. 21 acres of high value deer habitat (HSI >0.60), 20 acres of medium value deer habitat (HSI 0.40 to 0.50) and 50 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Wolf den buffer prescribed for site. Unit split on both sides of den and buffer area. Clearcut prescription will remove all old-growth habitat and reduce the deer and marten habitat values when unit is harvested. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

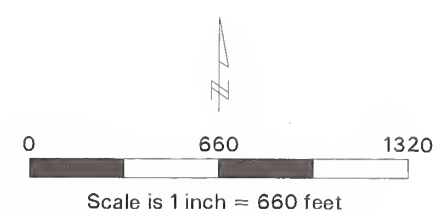
**No resource concerns for:** Karst, Wetlands, Soils, Scenery, Heritage, Vegetation

# Kuiu Unit 208b Alternative 2



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 208b Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	208b	<b>Unit Acres:</b>	40	<b>Alternative:</b>	5
<b>1999 Aerial Photo:</b>	598_100, 598_101	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,621 MBF
<b>TM-Compartment and Stand:</b>	3-131	<b>Volume Strata Acres:</b>	High 40 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46032)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC5.

**Response:** Stream 1: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

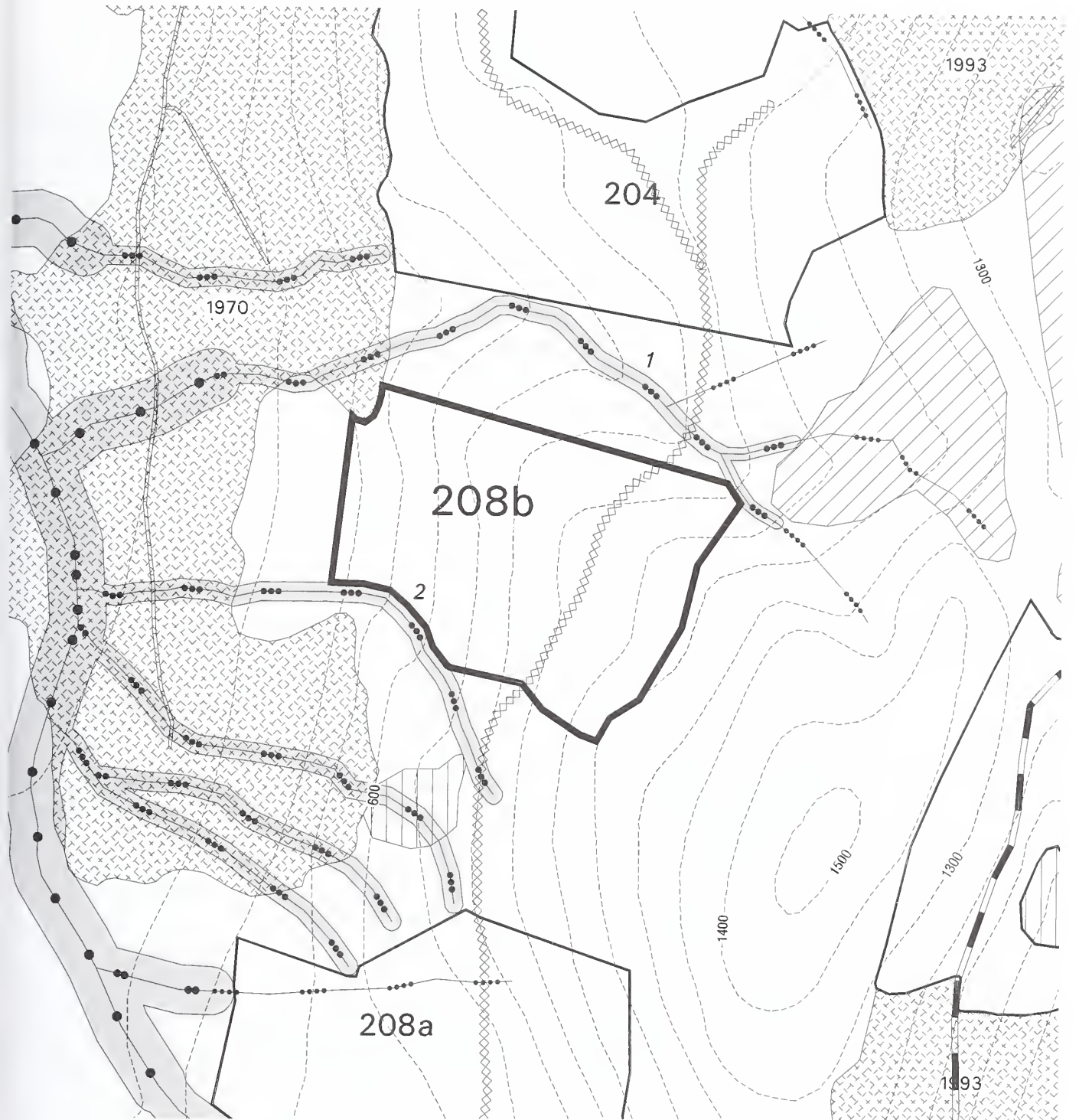
**Concern:** Wolf den found 2003 and monitored 2003-2005. No activity noted 2004-2005. Large amount of high Volstrata reported in this unit. 21 acres of high value deer habitat (HSI >0.60), 20 acres of medium value deer habitat (HSI 0.40 to 0.50) and 40 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Wolf den buffer prescribed for site. Unit split on both sides of den and buffer area. Clearcut prescription would remove all old-growth habitat and reduce the deer and marten habitat values. Harvest would not isolate high elevation habitat. No travel corridors would be removed.

**No resource concerns for:** Karst, Wetlands, Soils, Scenery, Heritage, Vegetation



# Kuiu Unit 208b Alternative 5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 208b Boundary    |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	209	<b>Unit Acres:</b>	64	<b>Alternatives:</b>	2, 3, 4, 5
<b>1999 Aerial Photo:</b>	598_100, 598_101	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,223 MBF Alts 2, 3, 4 2,074 MBF Alt 5
<b>TM-Compartment and Stand:</b>	3-132	<b>Volume Strata Acres:</b>	High 64 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alts 2, 3, and 4 Uneven-aged management, 50% area retention, Group Selection, 19 acres, Uneven-aged Management, 50% BA retention, Single Tree Selection, 45 acres

**Alt 5** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One existing NFS Road (46096)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC5.  
Stream 2 is Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1 and 2: In Alt 5 the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Soils

**Concern:** Evidence of past landslides uphill of Class 3 stream. Very steep slopes at V-notch, original design included 2 acres of extreme hazard soils (MMI-4).

**Response:** Extreme hazard soils (MMI-4) were removed from unit. No further soil concerns.

### Wildlife/Biological Diversity

**Concern:** Black bear, red-breasted sapsucker activity and game trails were noted in the unit. Entire unit is comprised of high Volstrata. 11 acres of high value deer habitat (HSI >0.60), 19 acres of medium value deer habitat (HSI 0.40 to 0.50) and 64 acres of high value marten habitat (HSI >0.89) are located with the unit.

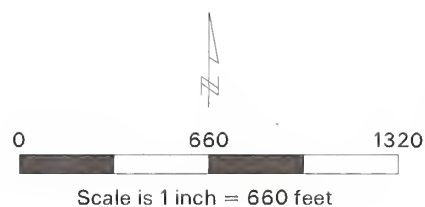
**Response:** 50% BA retention would mitigate the harvest of old-growth and deer and marten habitat values within the unit in Alternatives 2, 3, and 4. Clearcut harvest would remove all old-growth and reduce deer and marten habitat values in Alternative 5. Harvest would not isolate habitat or corridors in Alternatives 2, 3 and 4. Alternative 5 would isolate high elevation habitat and remove the travel corridors.

**No resource concerns for:** Karst, Wetlands, Scenery, Heritage, Vegetation

# Kuiu Unit 209 Alternative 2,3,4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 209 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	210	<b>Unit Acres:</b>	48	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	598_97, 98, 99	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,437 MBF
<b>TM-Compartment and Stand:</b>	3-133	<b>Volume Strata Acres:</b>	High 44 Medium 4 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III Channel Type HC2.  
Streams 2, 3, 4, and 5 are Class IV, Channel Type HC2.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2, 3, 4, and 5: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Soils

**Concern:** Steep cliff area just southwest of unit  
**Response:** Boundary located to avoid steep cliff areas.

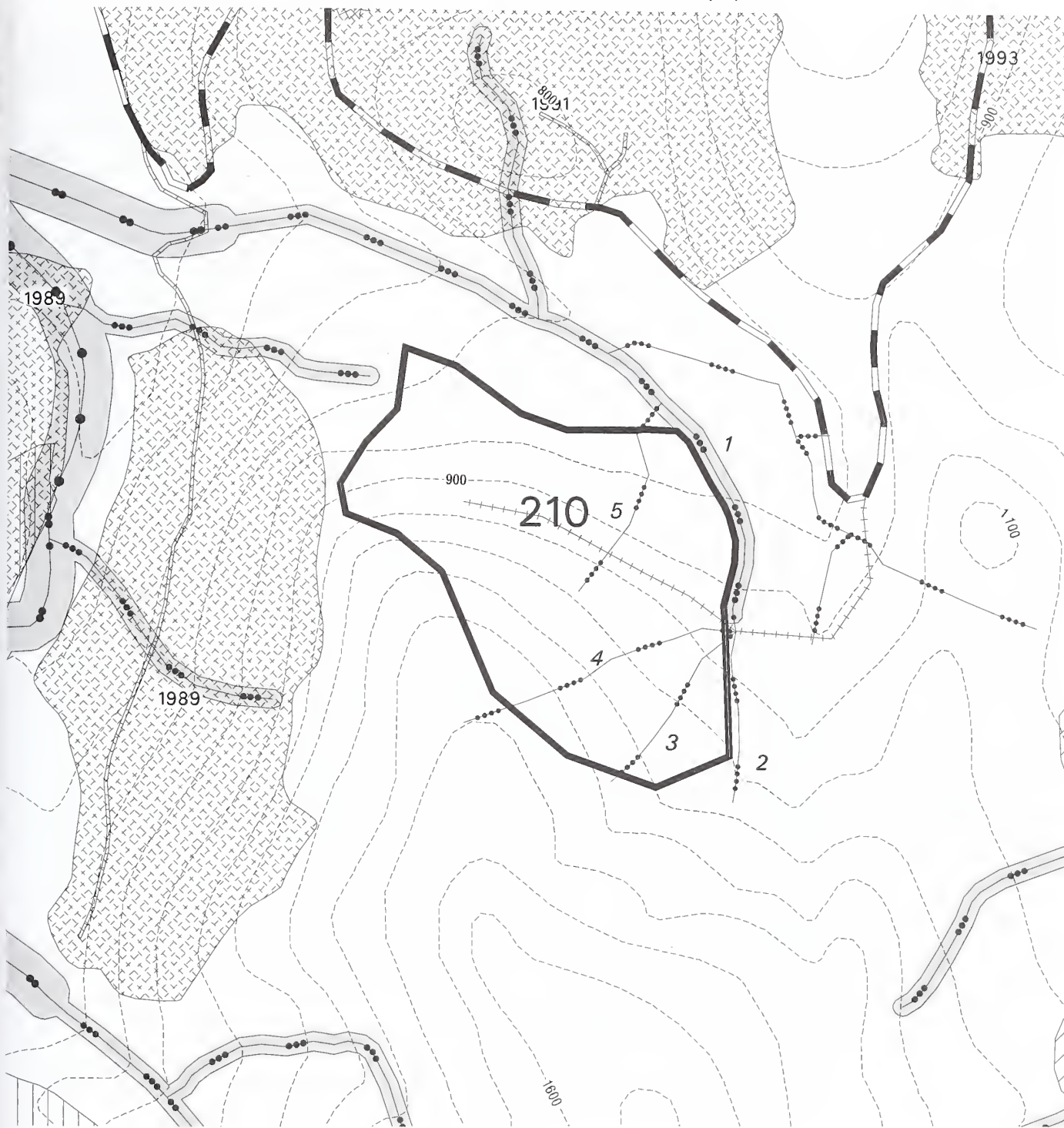
### Wildlife/Biological Diversity

**Concern:** Large amount of high Volstrata reported in this unit. 5 acres of medium value deer habitat (HSI 0.40 to 0.50) and 42 acres of high value marten habitat (HSI >0.89) locate within unit.  
**Response:** Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Scenery, Heritage, Vegetation, Karst, Wetlands

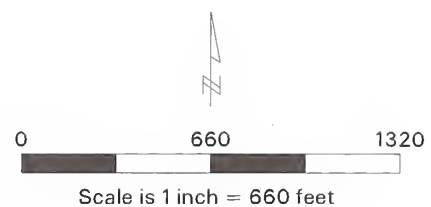


# Kuiu Unit 210 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 210 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	211	<b>Unit Acres:</b>	36	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	598_97, 98, 99	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	723 MBF
<b>TM-Compartment and Stand:</b>	3-134	<b>Volume Strata Acres:</b>	High 20 Medium 11 Low 5		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road and one existing NFS Road (46096)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC5.  
Stream 2 is Class IV, Channel Type HC2.

**Response:** Streams 1 and 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

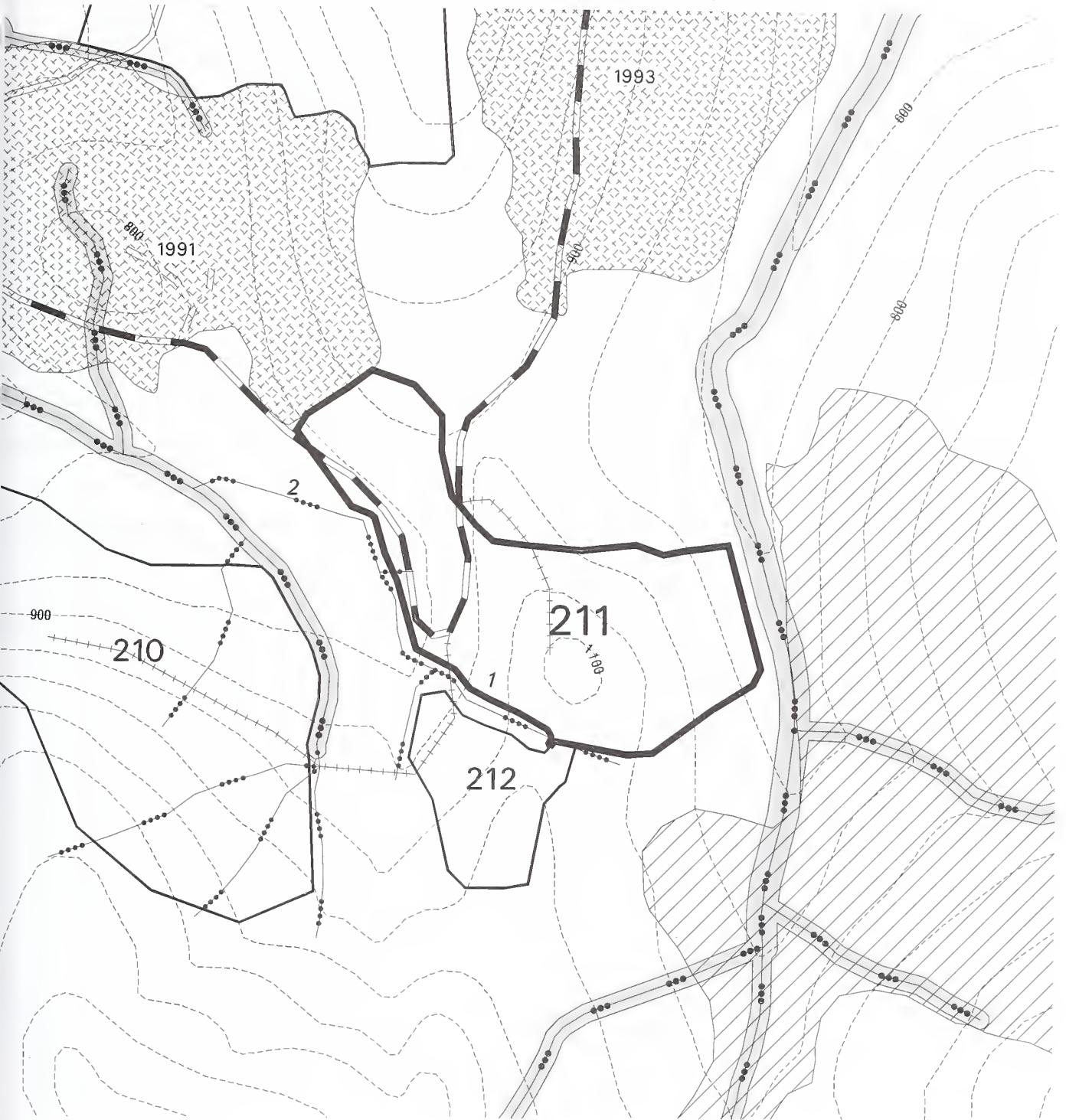
### Wildlife/Biological Diversity

**Concern:** Large amount of high Volstrata reported in this unit. 2 acres of high value deer habitat (HSI >0.60), 6 acres of medium value deer habitat (HSI 0.40 to 0.50) and 20 acres of high value marten habitat (HSI >0.89) are located within unit.

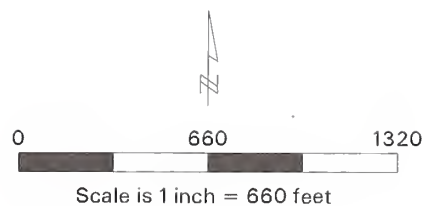
**Response:** Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage, Vegetation, Wildlife

# Kuiu Unit 211 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 211 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |



## Kuiu Timber Sale Unit Card

Unit Number:	212	Unit Acres:	9	Alternatives:	4, 5
1999 Aerial Photo:	598_97, 98, 99	Land Use Designation:	Timber Production	Net Timber Volume:	224 MBF
TM-Compartment and Stand:	3-135	Volume Strata Acres:	High 7 Medium 2 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Shovel / One temporary road

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1 and 2 are Class IV, Channel Type HC5.

**Response:** Streams 1 and 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

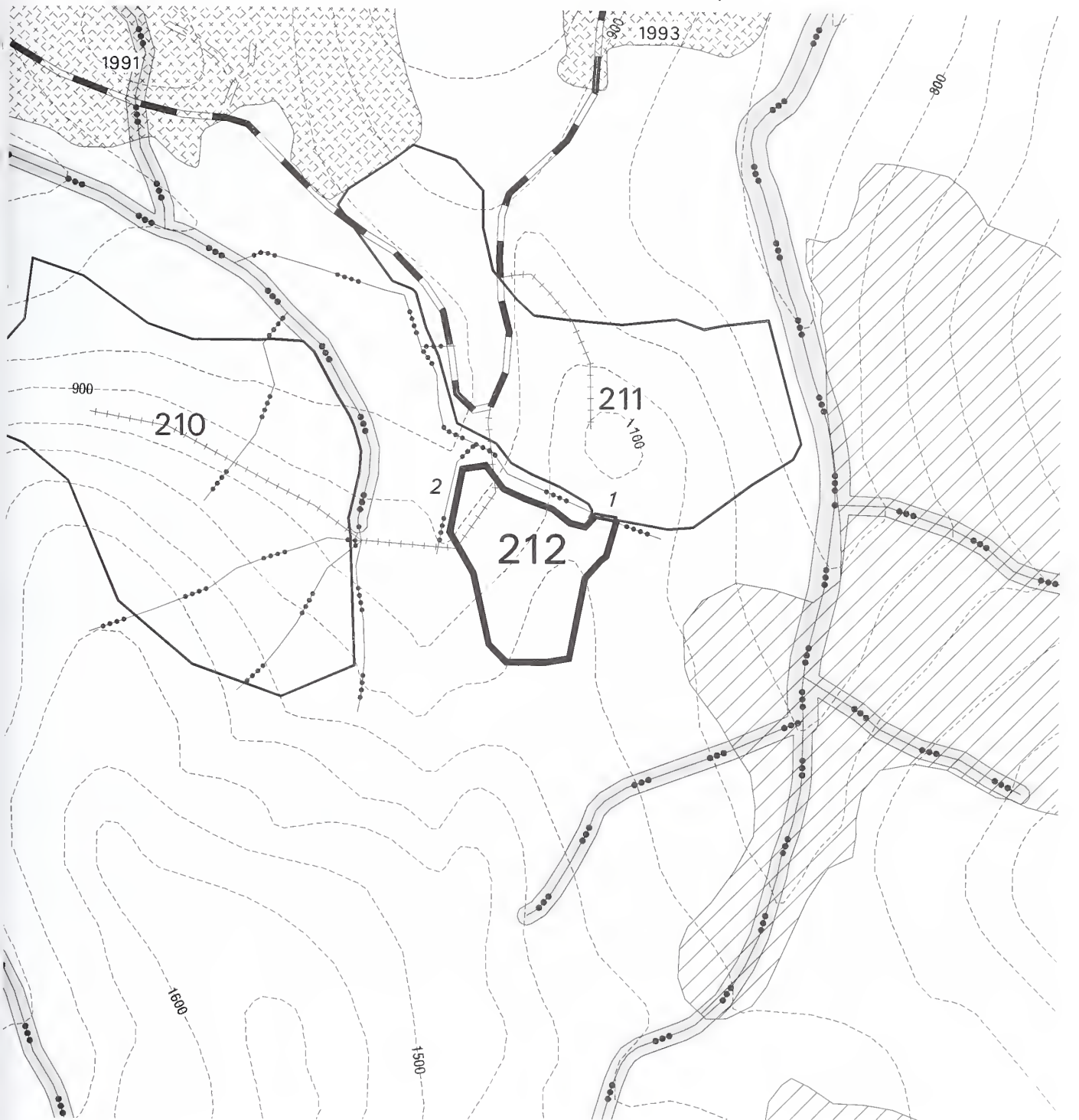
### Wildlife/Biological Diversity

**Concern:** 6 acres of medium value deer habitat (HSI 0.40 to 0.50) and 7 acres of high value marten habitat (HSI >0.89) are within the unit.

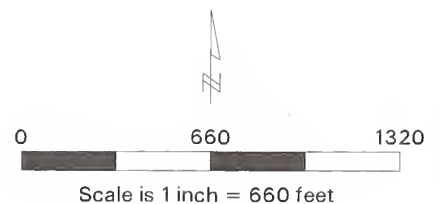
**Response:** Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage, Vegetation

# Kuiu Unit 212 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 212 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	302	<b>Unit Acres:</b>	66	<b>Alternatives:</b>	4
<b>1999 Aerial Photo:</b>	298_123, 298_124	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,309 MBF
<b>TM-Compartment and Stand:</b>	3-136	<b>Volume Strata Acres:</b>	High 66 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Uneven-aged management, 50% BA retention, Single Tree Selection

**Logging Method/ Transportation:** Helicopter / Use landing on existing NFS Road (6413)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1, 4, and 7 are Class III, Channel Type HC5.  
Streams 2, 3, 5, and 6 are Class IV, Channel Type HC5.

**Response:** Streams 1, 4, and 7: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2, 3, 5, and 6: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Soils

**Concern:** Steep soils exist in patches in unit.

**Response:** Helicopter harvest with full suspension.

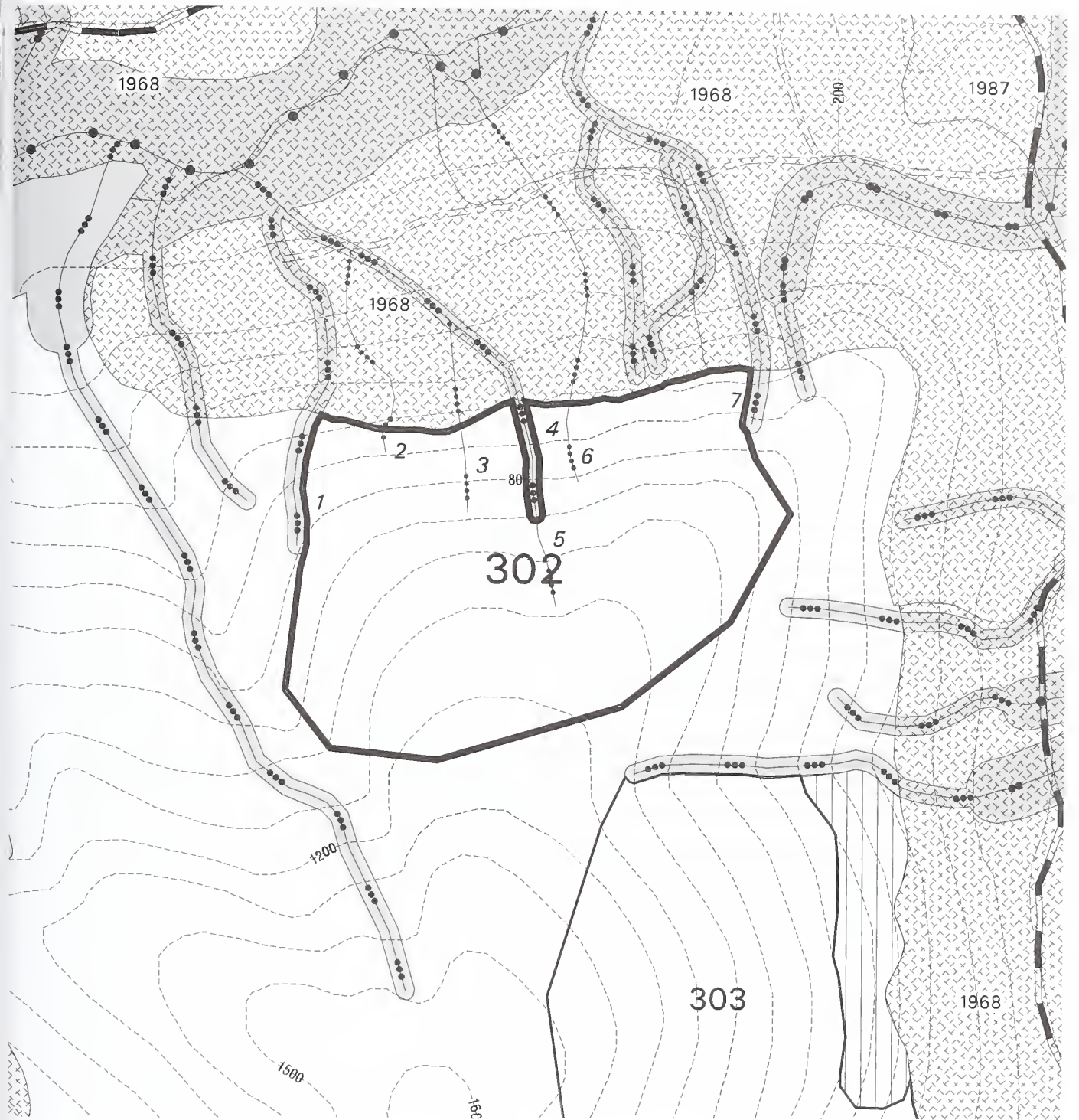
### Wildlife/Biological Diversity

**Concern:** Large amount of high Volstrata in unit. Less than one acre of high value deer habitat (HSI >0.60), 30 acres of medium value deer habitat (HSI 0.40 to 0.50) and 66 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** 50% BA retention would help maintain old-growth characteristics and values and retain high value marten habitat. Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Scenery, Heritage, Vegetation, Wetlands, Karst

# Kuiu Unit 302 Alternative 4



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Recreational River Corridor
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 302 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III

- Stream Value Class IV
- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval

0 660 1320

Scale is 1 inch = 660 feet

## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	303	<b>Unit Acres:</b>	58	<b>Alternatives:</b>	4
<b>1999 Aerial Photo:</b>	598_130, 598_131	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,157 MBF
<b>TM-Compartment and Stand:</b>	3-137	<b>Volume Strata Acres:</b>	High 58 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Uneven-aged management, 50% BA retention, Single Tree Selection

**Logging Method/ Transportation:** Helicopter / Use landings on existing NFS Road (6413)

## Resource Concerns & Responses

### Watershed/Fisheries

**Concern:** Streams 1, 2, 3, and 4 are Class III, Channel Type HC6.

**Response:** Streams 1, 2, 3, and 4: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Soils

**Concern:** Unit initially had 10 acres of extreme hazard soils (MMI-4).

**Response:** Extreme hazard soils (MMI-4) were deleted from unit boundary. No further soil concerns.

### Wildlife/Biological Diversity

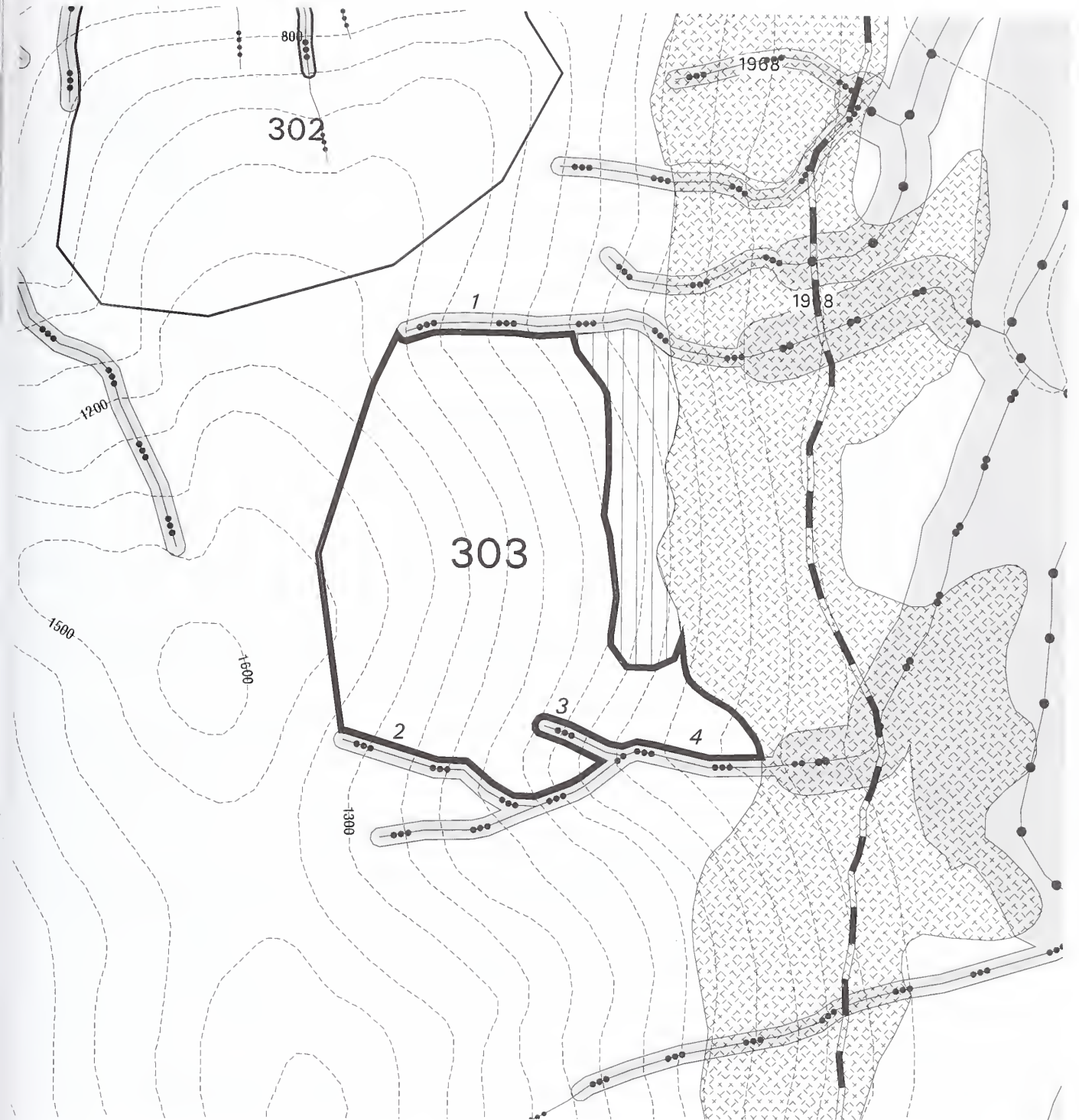
**Concern:** Large amount of high Volstrata in unit. 22 acres of important deer habitat (HSI >0.60) and 58 acres of high value marten habitat (HSI >0.89) within the unit.

**Response:** 50% BA retention would mitigate harvest by retaining old-growth characteristics and values and retain marten and deer habitat. Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Scenery, Heritage, Vegetation, Karst, Wetlands



# Kuiu Unit 303 Alternative 4



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Recreational River Corridor
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 303 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III

- Stream Value Class IV
- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval

0 660 1320  
Scale is 1 inch = 660 feet



## Kuiu Timber Sale Unit Card

Unit Number:	305 a/b	Unit Acres:	24	Alternatives:	4
1999 Aerial Photo:	598_131, 598_132	Land Use Designation:	Timber Production	Net Timber Volume:	484 MBF
TM-Compartment and Stand:	3-138	Volume Strata Acres:	High 24 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Uneven-aged management, 50% BA retention, Single Tree Selection

**Logging Method/ Transportation:** Helicopter / Use landing on existing NFS Road (6413)

## Resource Concerns & Responses

### Fish Habitat/Watershed

Concern: Stream 1 is Class III, Channel Type HC5.  
Stream 2 is Class IV, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC6.

Response: Streams 1 and 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16  
Stream 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Soils

Concern: Unit initially had 12.5 acres extreme hazard soils (MMI-4) that had evidence of windthrow.

Response: Unit boundary was designed to avoid all extreme hazard soils (MMI-4). No further soil concerns.

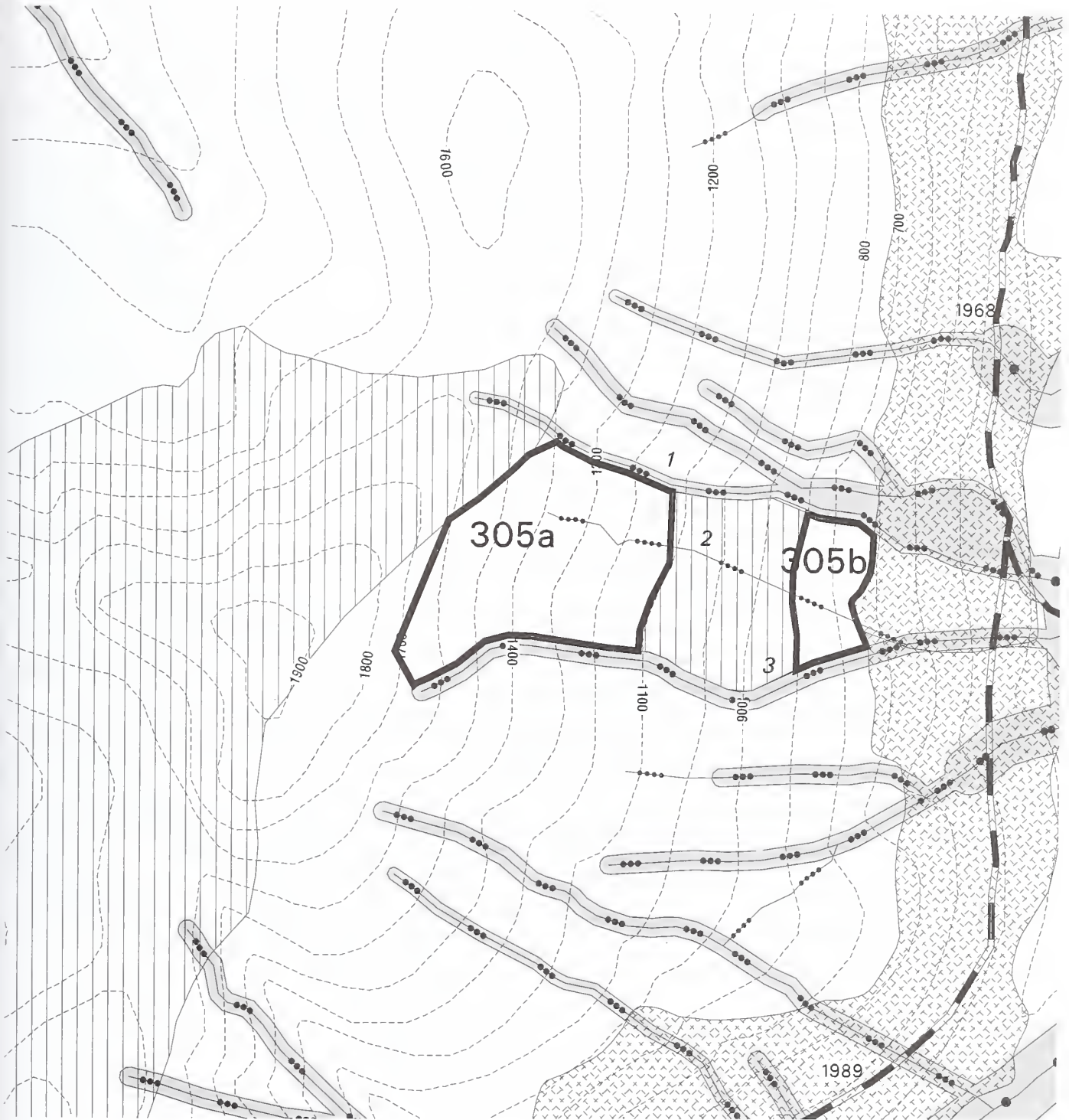
### Wildlife/Biological Diversity

Concern: Large amount of high Volstrata in unit. 5 acres of high value (HSI >0.60) deer habitat and 24 acres of high value marten (HSI >0.89) habitat are within unit.

Response: 50% BA retention would mitigate harvest by retaining old-growth characteristics and values and retain marten and deer habitat. Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Scenery, Heritage, Vegetation, Wetlands, Karst

# Kuiu Unit 305a/305b Alternative 4



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Recreational River Corridor
- Proposed Unit 305a Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III

- Stream Value Class IV
- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval

0 660 1320

Scale is 1 inch = 660 feet

## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	307	<b>Unit Acres:</b>	17	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	598_132, 598_133	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	288 MBF
<b>TM-Compartment and Stand:</b>	3-139	<b>Volume Strata Acres:</b>	High 8 Medium 9 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road

## Resource Concerns & Responses

### Watershed/Fisheries

**Concern:** Stream 1 is Class III, Channel Type HC6.  
Stream 2 is Class I MM2.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16  
Stream 2: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the floodplain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1 and 2: For Alts 3, 4 and 5 the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wildlife/Biological Diversity

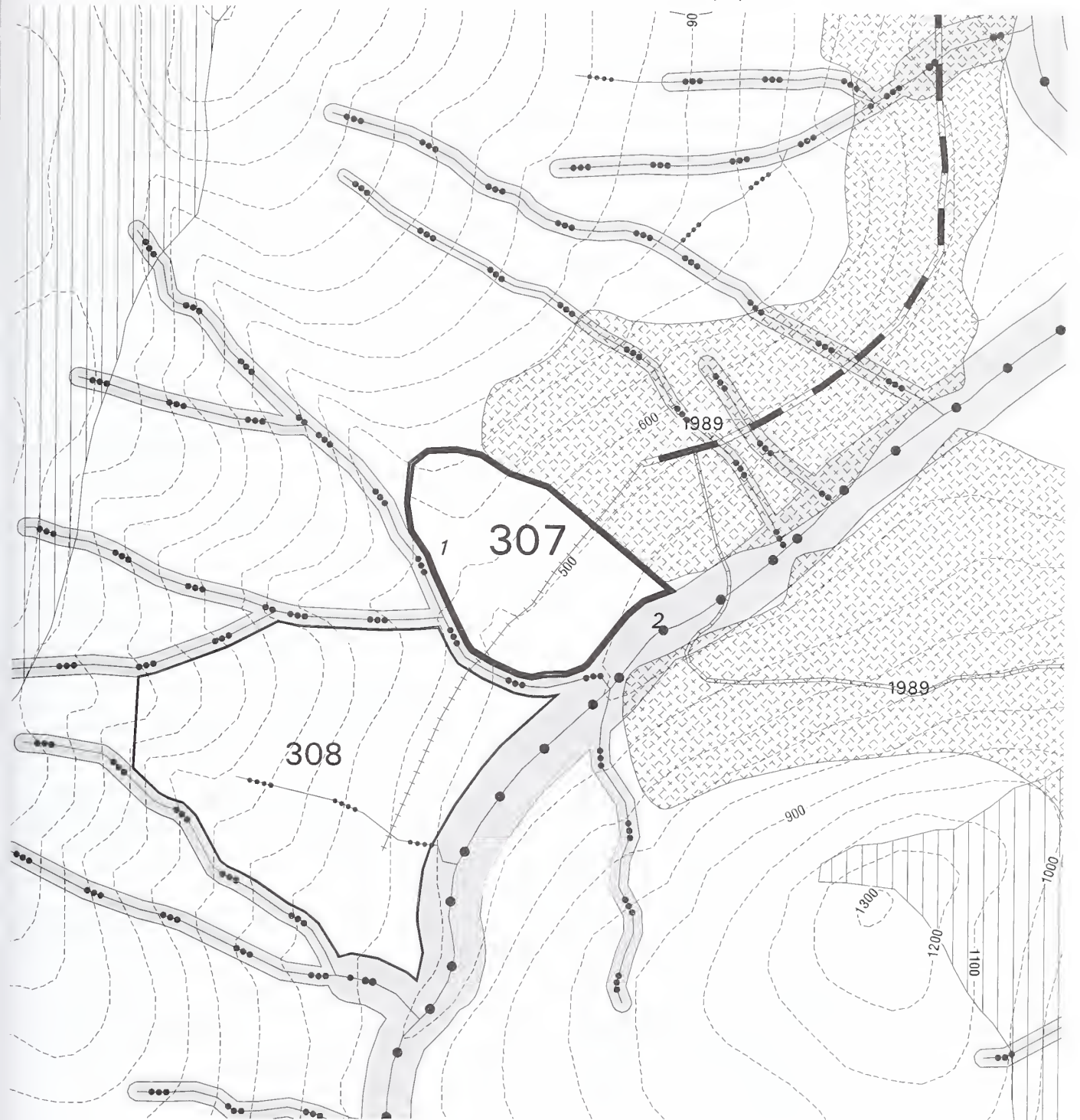
**Concern:** Large amount of high and medium Volstrata in unit. 8 acres of high value deer habitat (HSI >0.60) and 8 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage, Vegetation

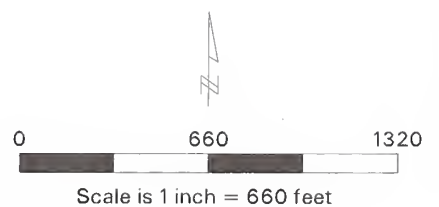


# Kuiu Unit 307 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 307 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

Unit Number:	308	Unit Acres:	39	Alternatives:	3, 4, 5
1999 Aerial Photo:	298_126, 298_127	Land Use Designation:	Timber Production	Net Timber Volume:	297 MBF
TM-Compartment and Stand:	3-140	Volume Strata Acres:	High 6 Medium 33 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable and Shovel / One temporary road

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1, 2, and 4 are Class III, Channel Type HC6.  
Stream 3 is Class IV Channel Type HC5.  
Stream 5 is Class II Channel Type HC6.  
Stream 6 is Class I Channel Type MM2.

**Response:** Streams 1, 2, and 4: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 5: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 6: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1, 2, 4, 5 and 6: In Alts 3, 4 and 5 the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

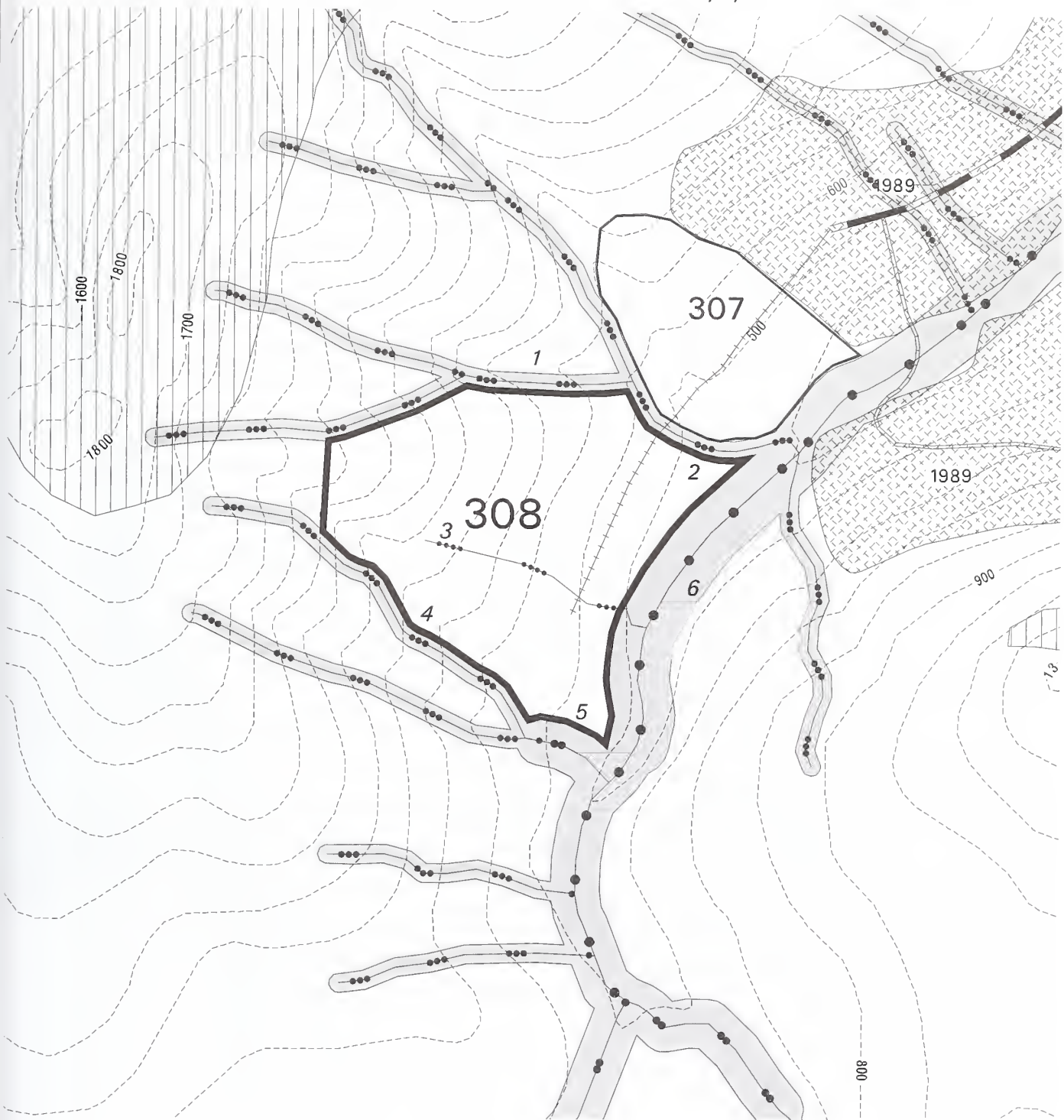
### Wildlife/Biological Diversity

**Concern:** Large amount of medium Volstrata in unit. 5 acres of high value deer habitat (HSI >0.60) and 5 acres of high value marten habitat (HSI >0.89) are within the unit.

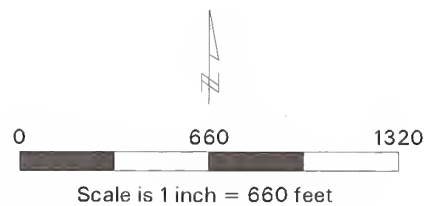
**Response:** Harvest would not isolate habitat and no corridors would be removed.

**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage, Vegetation

# Kuiu Unit 308 Alternative 3,4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 308 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	401	<b>Unit Acres:</b>	20	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	198_72, 198_73	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	653 MBF
<b>TM-Compartment and Stand:</b>	2-127	<b>Volume Strata Acres:</b>	High 20 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / Two reconditioned NFS Roads (6417 and 6422)

## Resource Concerns & Responses

### Watershed/Fisheries

**Concern:** Stream 1 is Class I, Channel Type MM1.  
Stream 2 is Class II, Channel Type HC3.  
Stream 3 is Class III, Channel Type HC6.

**Response:** Stream 1: No programmed commercial timber harvest in the RMA, which is defined as the greatest of the flood plain, riparian vegetation or soils, riparian associated wetland fens, or 120 feet. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

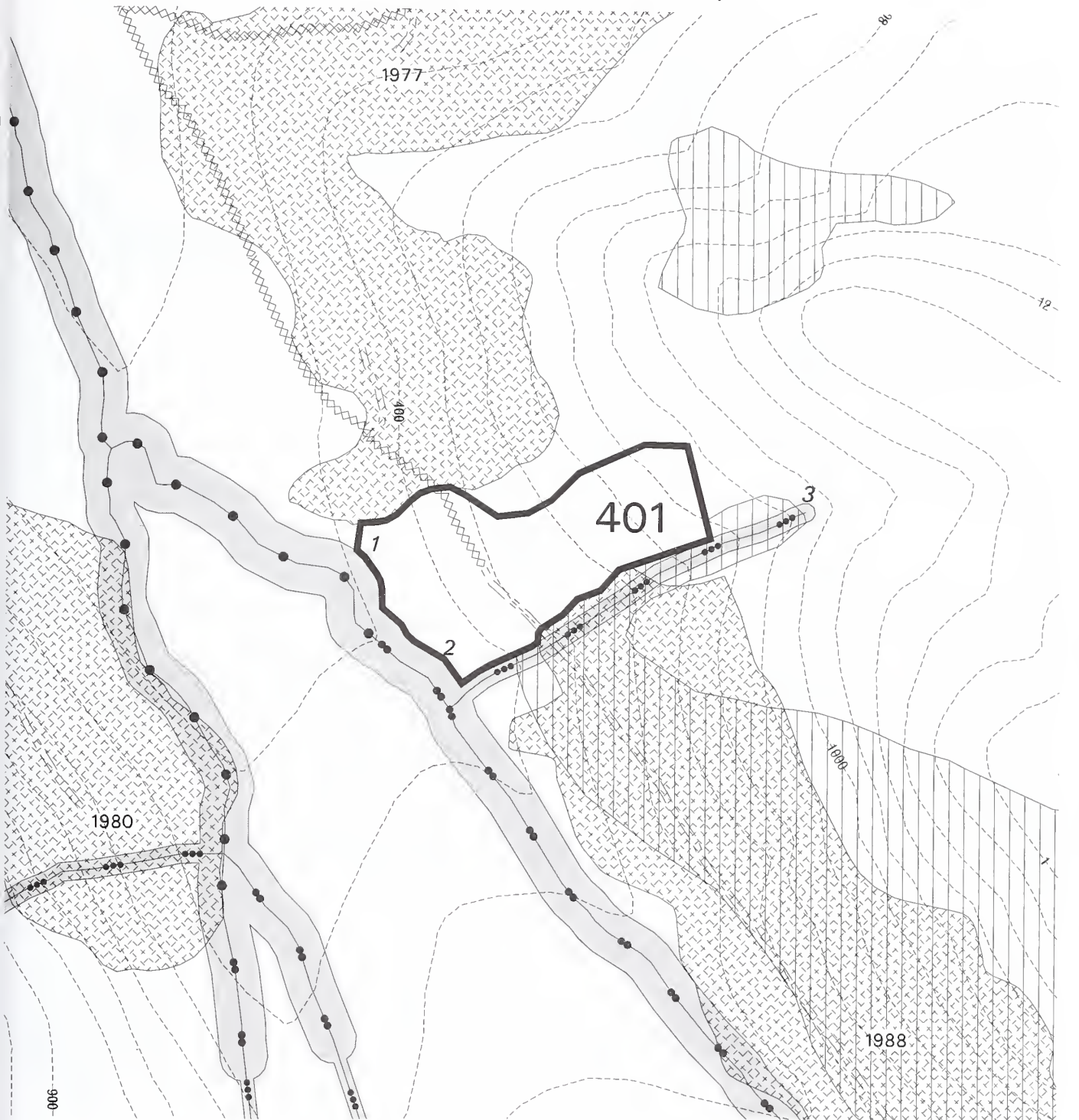
**Concern:** IDT recommended dropping this unit from alternatives 2 and 3 because it was a wildlife corridor between two existing clearcuts. Large amount of high Volstrata would be harvested in this unit. 17 acres of high value deer habitat (HSI >0.60), 3 acres of medium value deer habitat (HSI 4.0 to 5.0) and 20 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Concern not addressed. Clearcut harvest would remove wildlife corridor.

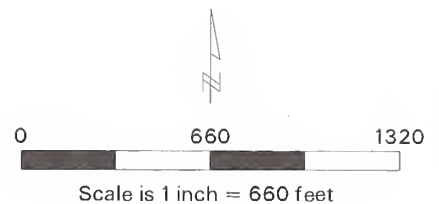
**No resource concerns for:** Soils, Scenery, Heritage, Vegetation, Karst, Wetlands



# Kuiu Unit 401 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 401 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	402	<b>Unit Acres:</b>	24	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	298_129, 298_130	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	659 MBF
<b>TM-Compartment and Stand:</b>	6-36	<b>Volume Strata Acres:</b>	High 19 Medium 3 Low 2		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46030)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1, 2, and 4 are Class IV, Channel Type HC5.

Stream 3 is Class IV, Channel Type HC2.

Stream 5 is Class II, Channel Type HC2.

Stream 6 is Class III, Channel Type HC2.

**Response:** Streams 1, 2, 3, and 4: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

Stream 5: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

Stream 6: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Access road would cross a Class II stream.

**Response:** Install a log stringer bridge. Designate location of stream crossing and minimize stream channel disturbance from road construction/storage (BMPs 14.14, 14.17).

### Wetlands

**Concern:** Forested wetland exists in the unit.

**Response:** Suitable for cable harvest with partial suspension, too wet for shovel.

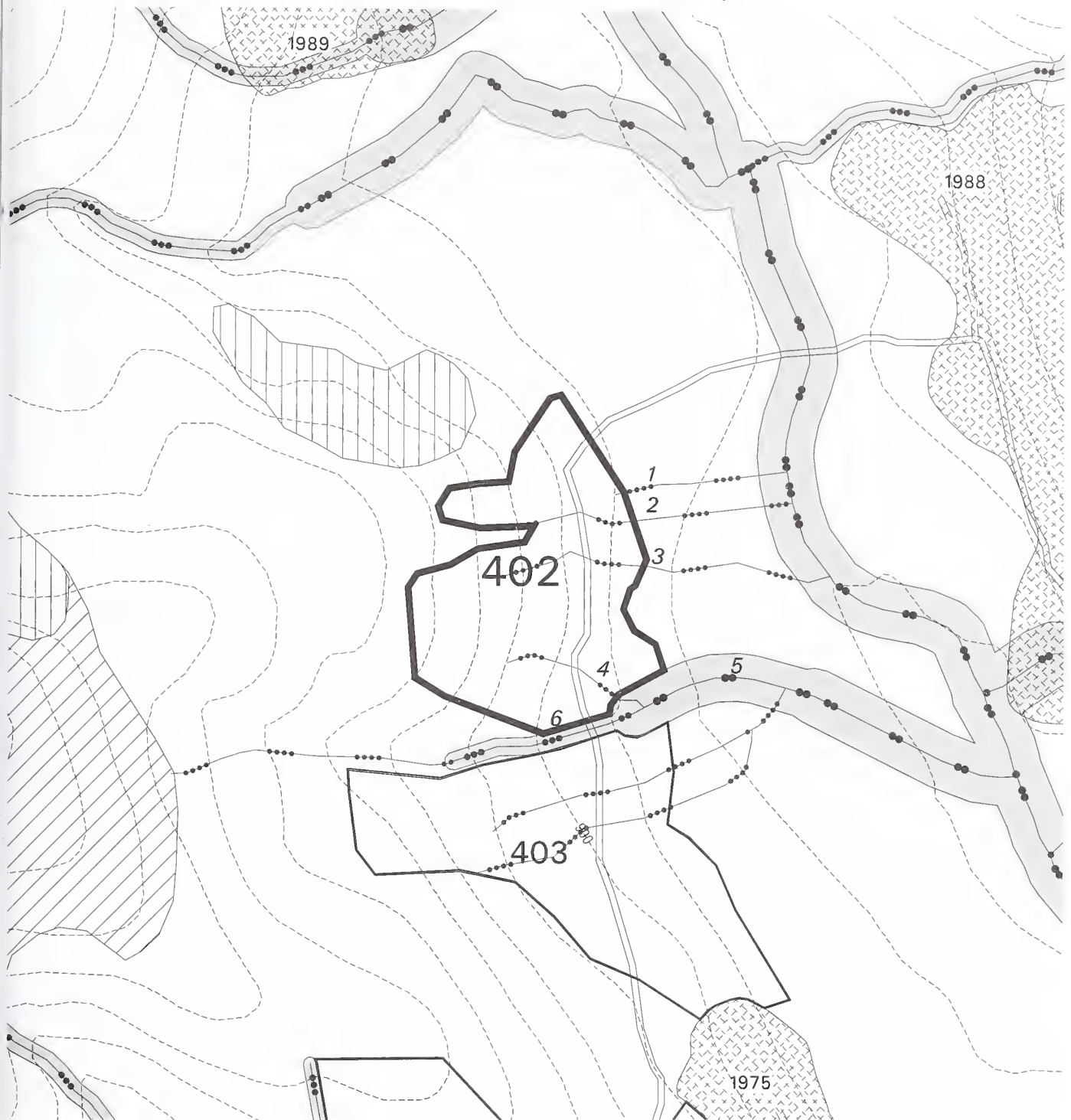
### Wildlife/Biological Diversity

**Concern:** Unit is potential wildlife travel corridor. Large amount of high Volstrata would be harvested in this unit. 1 acre of high value deer habitat (HSI >0.60) and 19 acres of high value marten habitat (HSI >0.89) are within the unit.

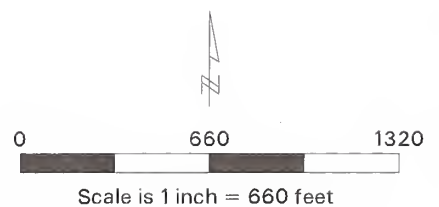
**Response:** Concern not addressed. Clearcut harvest would reduce wildlife travel corridor.

**No resource concerns for:** Scenery, Heritage, Vegetation, Soils, Karst

# Kuiu Unit 402 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 402 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |



## Kuiu Timber Sale Unit Card

Unit Number:	403	Unit Acres:	29	Alternatives:	3, 4, 5
1999 Aerial Photo:	298_129, 130, 131	Land Use Designation:	Timber Production	Net Timber Volume:	857 MBF
TM-Compartment and Stand:	6-137	Volume Strata Acres:	High 26 Medium 3 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One new NFS Road (46030)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Streams 1 and 5 are Class IV, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC2.  
Stream 4 is Class IV, Channel Type HC2.  
Stream 3 is Class II, Channel Type HC2.

**Response:** Streams 1, 4, and 5: Split yard away from class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Access road would cross a Class II stream.

**Response:** Install a log stringer bridge. Designate location of stream crossing and minimize stream channel disturbance from road construction/storage (BMPs 14.14, 14.17).

### Wetlands

**Concern:** Forested wetland exists in the unit

**Response:** Suitable for cable harvest with partial suspension, too wet for shovel.

**Concern:** Road crosses wetlands.

**Response:** Follow BMPs when constructing road in wetland (examples include, minimizing road width and deep placement of culverts).

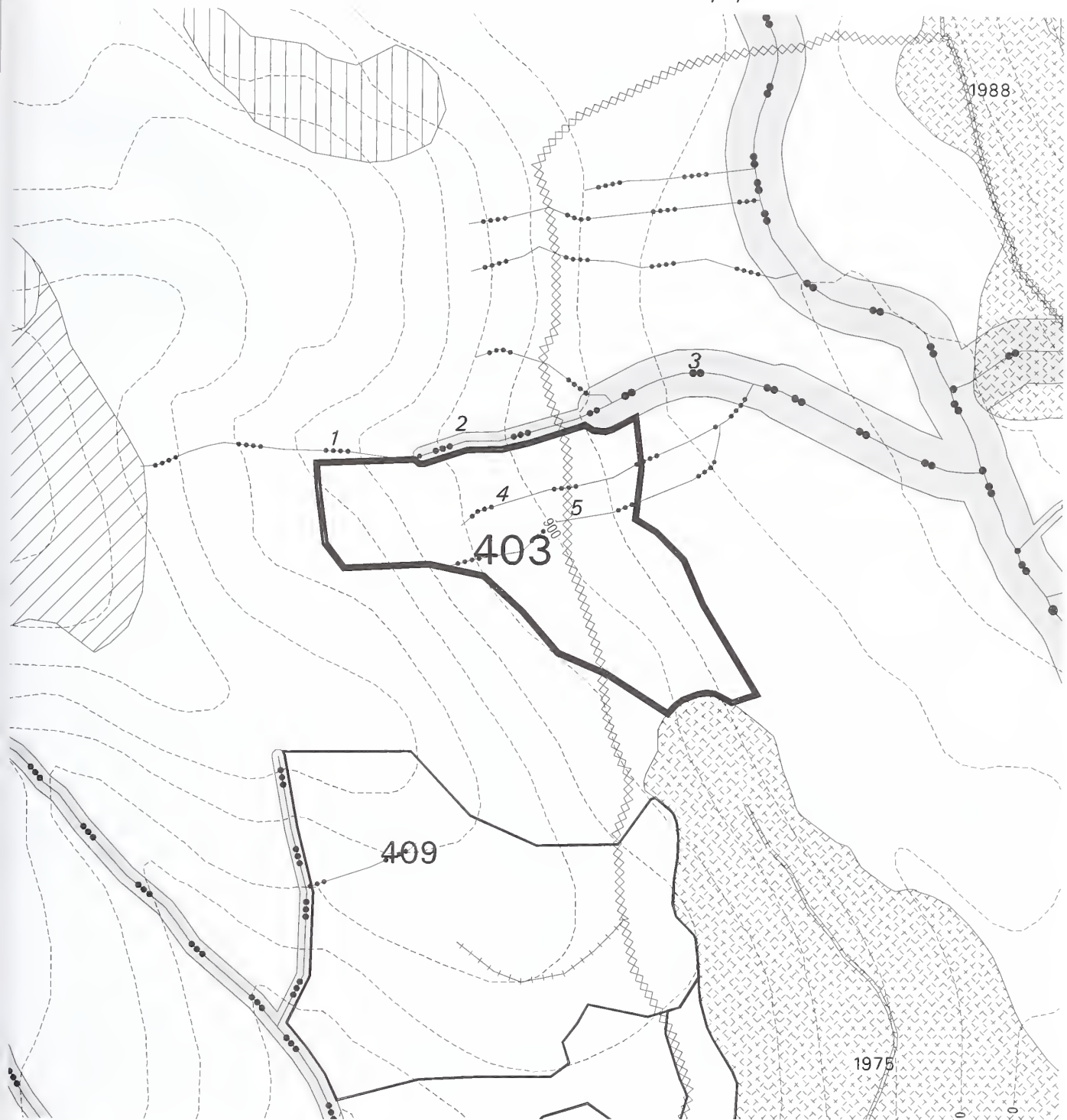
### Wildlife/Biological Diversity

**Concern:** Large amount of high Volstrata would be harvested in this unit. 6 acres of high value deer habitat (HSI >0.60) and 26 acres of high value marten habitat (HSI >0.89) are within the unit.

**Response:** Harvest would not isolate habitat and corridors would not be removed.

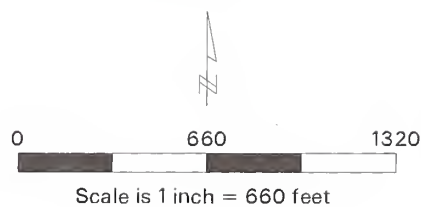
**No resource concerns for:** Scenery, Heritage, Vegetation, Soils, Karst

# Kuiu Unit 403 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 403 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	404	<b>Unit Acres:</b>	28	<b>Alternatives:</b>	2, 3, 4, 5
<b>1999 Aerial Photo:</b>	598_136, 598_137	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	472 MBF Alt 2 & 3 770 MBF Alt 4 & 5
<b>TM-Compartment and Stand:</b>	6-38	<b>Volume Strata Acres:</b>	High 23 Medium 4 Low 1		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alts 2 and 3 Uneven-aged management, 50% BA retention, Single Tree Selection.  
Alts 4 and 5 Even-aged management.

**Logging Method/ Transportation:** Cable / One new NFS Road (46030)

### Resource Concerns & Responses

#### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC5.  
Stream 2 is Class III, Channel Type HC2.  
Stream 3 is Class I, Channel Type MC2.  
Stream 4 is Class IV, Channel Type HC5.

**Response:** Stream 1 and 4: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 3: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the channel, or to the top of the side-slope break, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 2 and 3: In Alts 4 and 5 the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

#### Wetlands

**Concern:** Forested wetland exists in the unit.

**Response:** Suitable for cable harvest with partial suspension, too wet for shovel.

#### Wildlife/Biological Diversity

**Concern:** Unit includes portion of a corridor between two existing managed stands. High and medium Volstrata are within the unit. 21 acres of high value deer habitat (HSI >0.60), 4 acres of medium value deer habitat (HSI 4.0-5.0) and 23 acres of high value marten habitat (HSI >0.89) are within the unit.

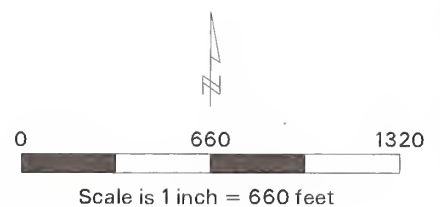
**Response:** Partial harvest with 50% BA retention would mitigate impacts to old-growth, help retain marten and deer habitat, and maintain corridor in Alternatives 2 and 3. Clearcut harvest systems would remove corridors in Alternatives 4 and 5.

**No resource concerns for:** Scenery, Heritage, Vegetation, Soils, Karst

# Kuiu Unit 404 Alternative 2,3,4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 404 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	405	<b>Unit Acres:</b>	25	<b>Alternatives:</b>	2, 3, 4, 5
<b>1999 Aerial Photo:</b>	598_136, 598_137	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	410 MBF Alt 2 & 3 820 MBF Alt 4 & 5
<b>TM-Compartment and Stand:</b>	6-39	<b>Volume Strata Acres:</b>	High 25 Medium Low		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alts 2 and 3 Two-aged management, 50% area retention, clearcut with reserves  
Alts 4 and 5 Even-aged management

**Logging Method/ Transportation:** Cable / One new NFS Road (46030) and one temporary road

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC2.  
Stream 2 is Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes stand susceptible to windthrow.

**Response:** Stream 1: In Alts 2 and 3 some retention would be left along the stream buffer to protect against windthrow. In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wetlands

**Concern:** Forested wetland exists in the unit.

**Response:** Suitable for cable harvest with partial suspension, too wet for shovel.

### Wildlife/Biological Diversity

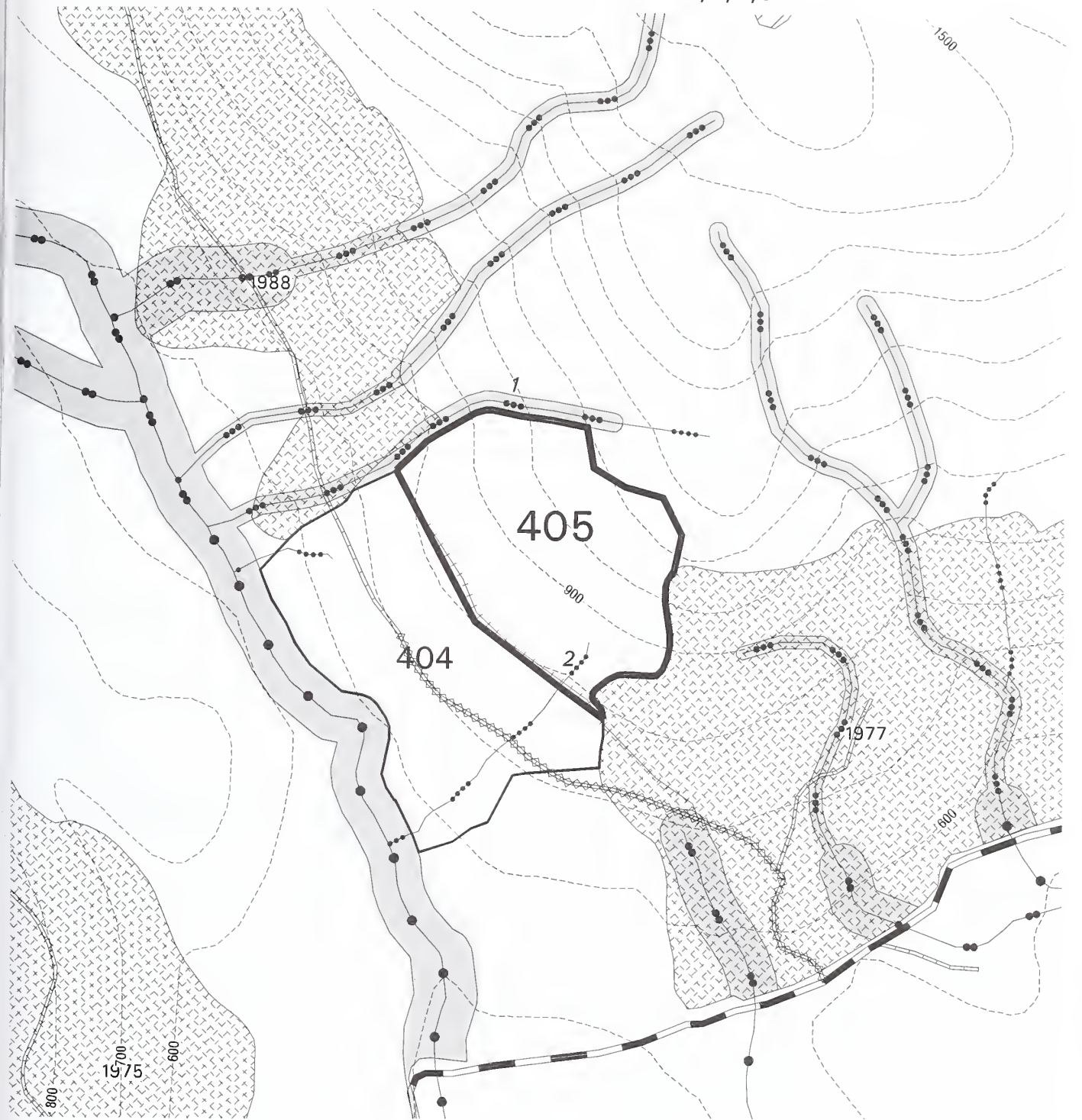
**Concern:** This unit linked with unit 404 is a wildlife corridor between two previously harvested units. High Volstrata would be harvested in this unit. Less than one acre of high value deer habitat (HSI >0.60), 25 acres of medium value deer habitat (HSI 4.0-5.0) and 25 acres of high value marten habitat (HSI >0.89) would be harvested within this unit.

**Response:** Partial harvest with 50% area retention would mitigate impacts to old-growth habitat, retain marten and deer habitat, and retain the corridor. Clearcut harvest would remove the corridor.

**No resource concerns for:** Soils, Karst, Scenery, Heritage, Vegetation

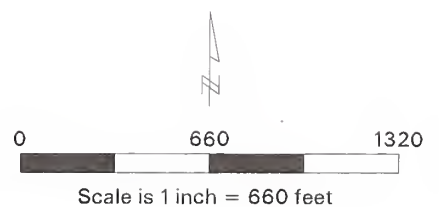


# Kuiu Unit 405 Alternative 2,3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 405 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	409	<b>Unit Acres:</b>	46	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	298_130, 131, 132	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	663 MBF Alt 3 1,325 MBF Alts 4 &
<b>TM-Compartment and Stand:</b>	6-40 & 7-121	<b>Volume Strata Acres:</b>	High 40 Medium 6 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 3 Two-aged management - 50% area retention, clearcut with reserves

Alt 4 and 5 Even-aged management, clearcut

**Logging Method/ Transportation:** Shovel / One temporary road and one new NFS Road (46030)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC5.  
Stream 2 is Class IV, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC6.

**Response:** Streams 1 and 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16. In Alt 3 some retention would be left along the stream buffer to protect against windthrow.  
Stream 2: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

**Concern:** Access road would cross a Class II stream.

**Response:** Install a log stringer bridge. Designate location of stream crossing and minimize stream channel disturbance from road construction/storage (BMPs 14.14, 14.17).

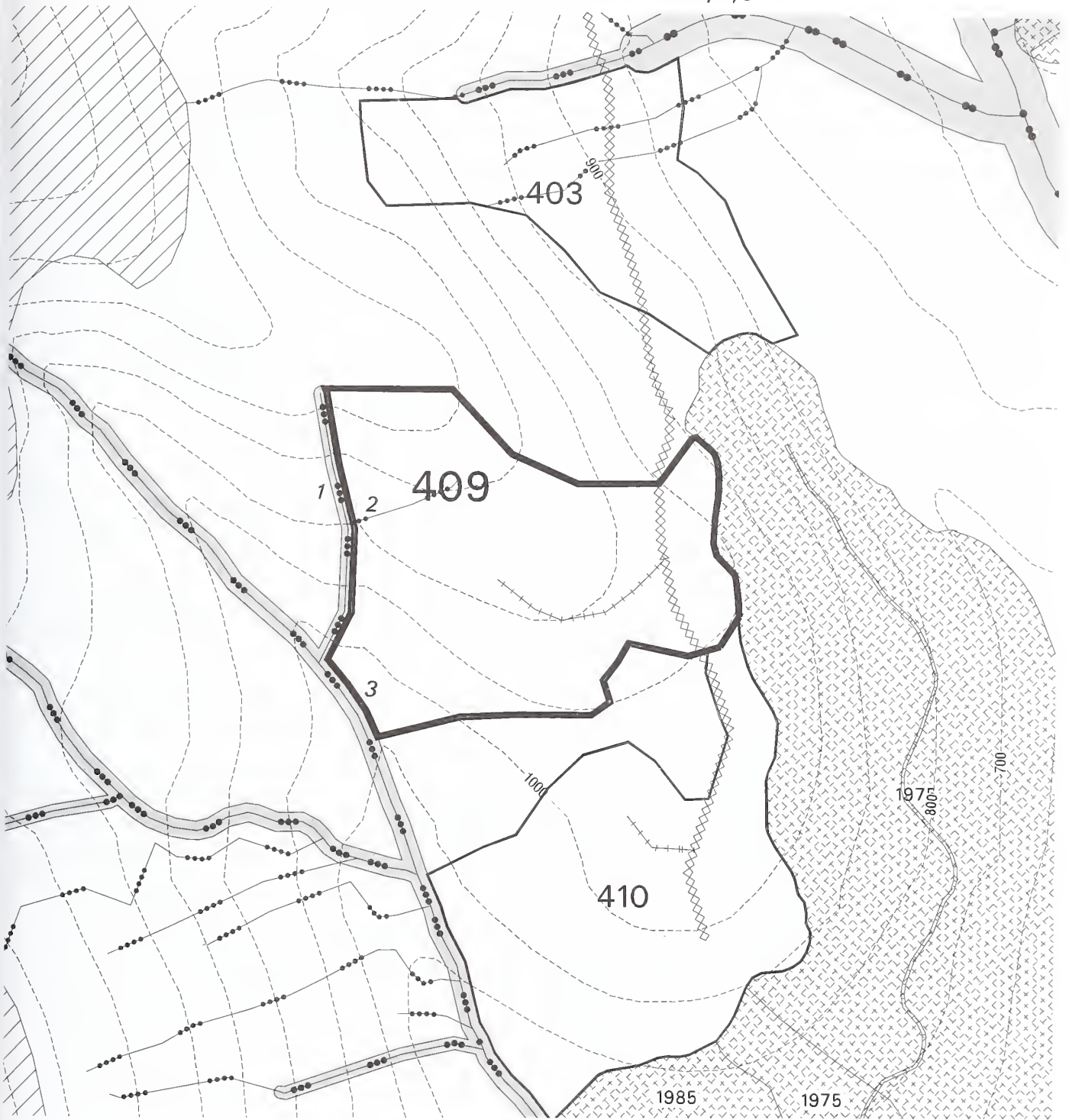
### Wildlife/Biological Diversity

**Concern:** Wildlife corridor between two previously harvested units. High and medium Volstrata occur within this unit. 27 acres of medium value deer habitat (HSI 4.0-5.0) and 40 acres of high value marten habitat (HSI >0.89) occur within this unit.

**Response:** Travel corridor would be mitigated by 50% area retention in Alternative 3. Clearcut harvest in Alternatives 4 and 5 would remove travel corridor.

**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage, Vegetation

# Kuiu Unit 409 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 409 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	410	<b>Unit Acres:</b>	45	<b>Alternatives:</b>	3, 4, 5
<b>1999 Aerial Photo:</b>	298_130, 131, 132	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	996 MBF
<b>TM-Compartment and Stand:</b>	6-41 & 7-122	<b>Volume Strata Acres:</b>	High 29 Medium 15 Low 1		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road and one new NFS Road (46030)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC6.

**Response:** No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Stream 1: In Alts 3, 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

**Concern:** Access road would cross a Class II stream.

**Response:** Install a log stringer bridge. Designate location of stream crossing and minimize stream channel disturbance from road construction/storage (BMPs 14.14, 14.17).

### Wildlife/Biological Diversity

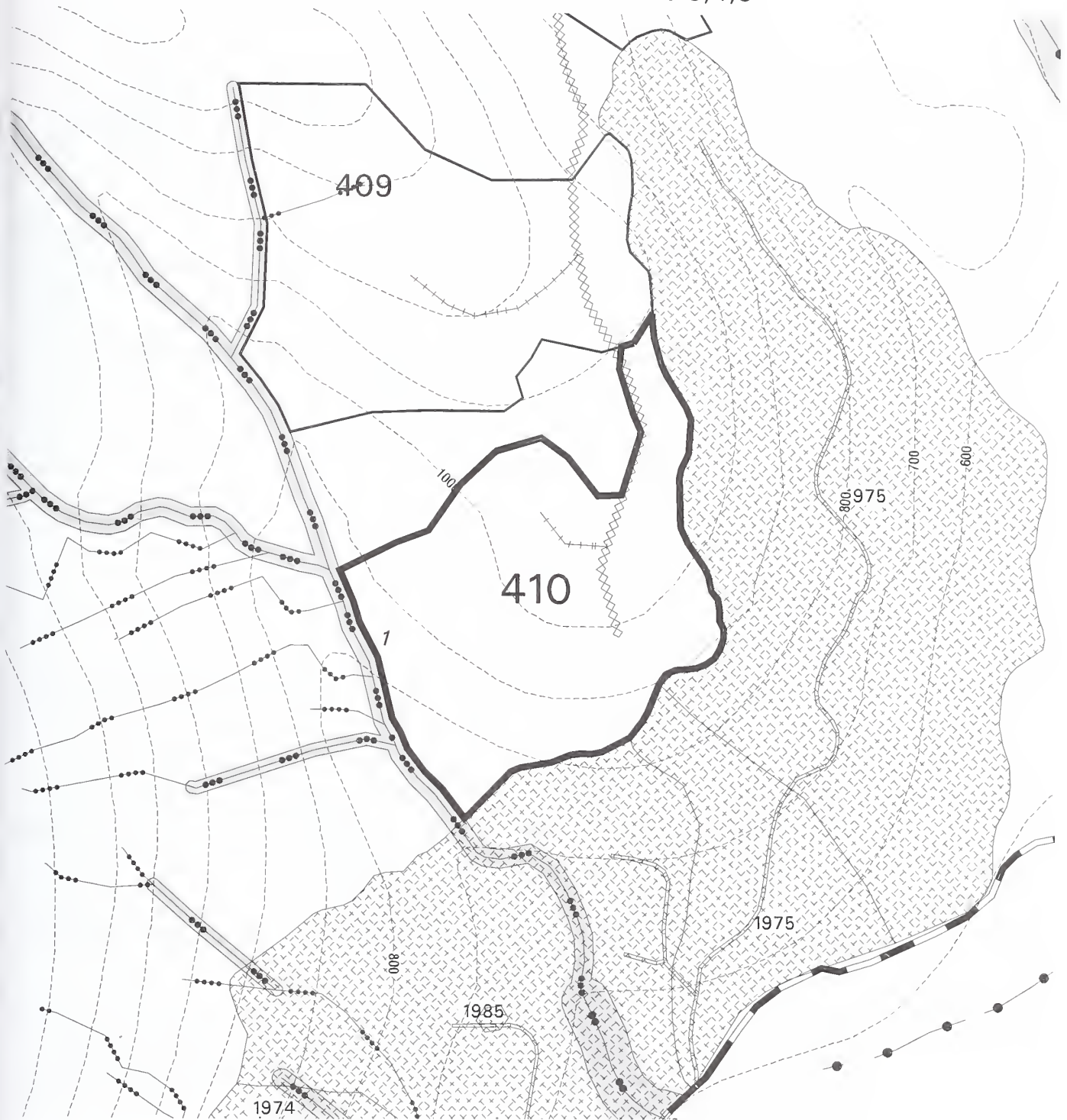
**Concern:** High amount of animal use was reported. Field crews noted red squirrel, black bear, deer, red-breasted sapsucker, and many neo-tropical migrant birds. Large amount of high and medium Volstrata in unit. 2 acres of high value deer habitat (HSI >0.60), 21 acres of medium value deer habitat (HSI 4.0-5.0) along with 29 acres of high value marten habitat (HSI >0.89) occur within the unit.

**Response:** Clearcut harvest would not isolate habitat or eliminate corridor.

**No resource concerns for:** Soils, Wetlands, Scenery, Heritage, Vegetation, Karst

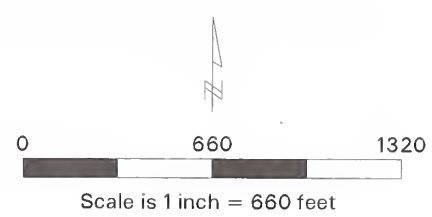


# Kuiu Unit 410 Alternative 3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 410 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	412	<b>Unit Acres:</b>	99	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	298_132, 133, 134	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	3,048 MBF
<b>TM-Compartment and Stand:</b>	7-123	<b>Volume Strata Acres:</b>	High 93 Medium 6 Low		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road and one new NFS Road (46035)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class IV, Channel Type HC2.  
Stream reach 2 is Class II, Channel Type HC2.  
Stream 3 is Rowan Creek, and is Class II, Channel Type MC2.  
Stream reach 4 is Class II, Channel Type HC2.  
Stream reach 5 is Class IV, Channel Type HC2.  
Stream 6 is Class III, Channel Type HC5.  
Stream 7 is Class III, Channel Type HC6.

**Response:** Streams 1 and 5: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2, 3, and 4: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 6 and 7: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 2, 3, 4, 6 and 7: In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wildlife/Biological Diversity

**Concern:** Black bear, red squirrel, deer, red-breasted sapsucker use and game trails were reported by field personnel. Brown Creepers were present and vocalizations were heard within the unit. Large amount of high Volstrata in unit. 50 acres of high value deer habitat (HSI >0.60), 26 acres of medium value deer habitat (HSI 4.0-5.0) along with 93 acres of high value marten habitat (HSI >0.89) occur within the unit.

**Response:** Clearcut harvest would not isolate habitat and area is not an isolated corridor.

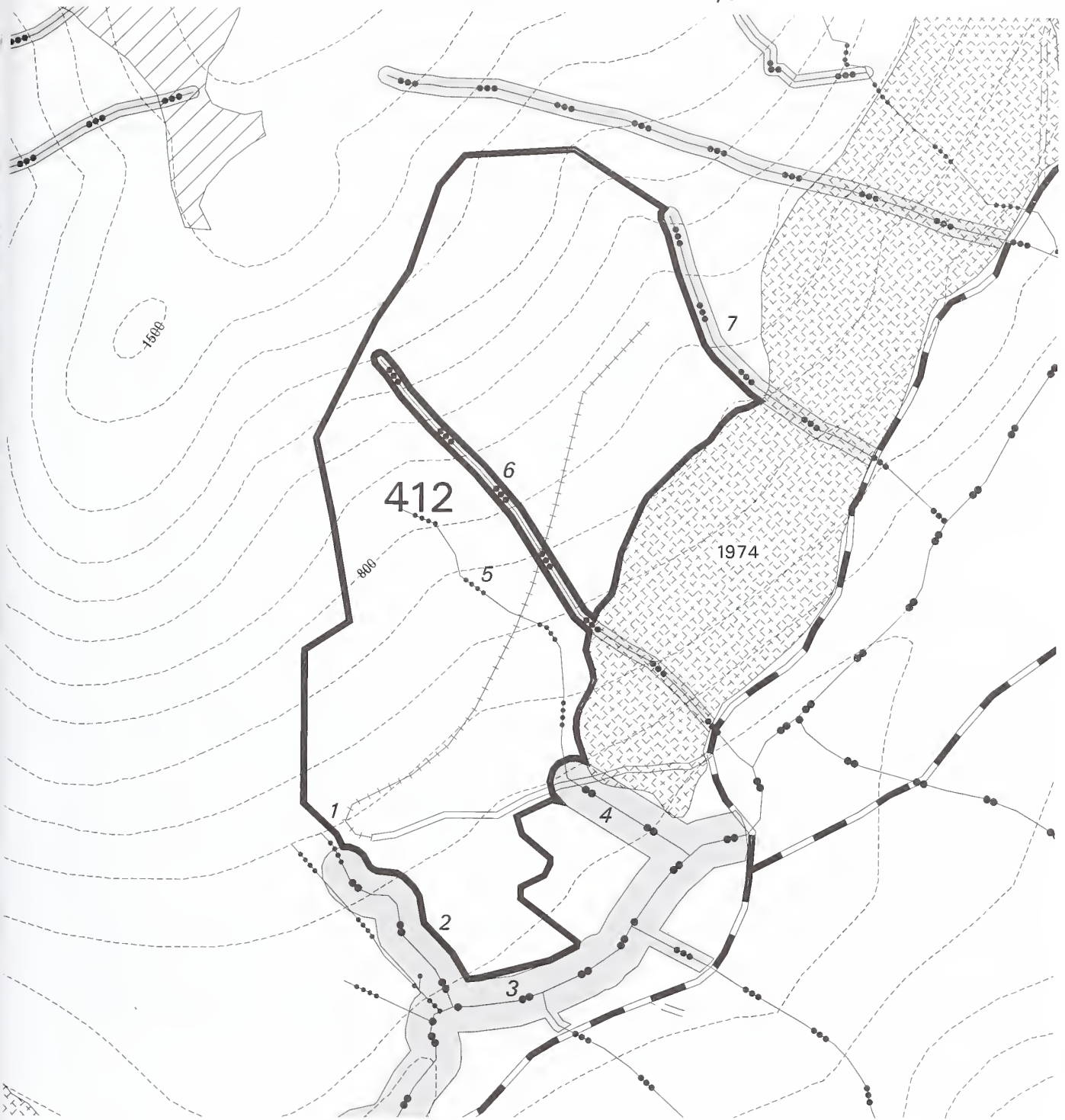
### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

**Response:** During layout ensure harvest unit does not exceed 100 acres.

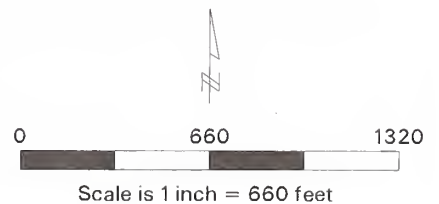
**No resource concerns for:** Soils, Karst, Wetlands, Scenery, Heritage

# Kuiu Unit 412 Alternative 4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Recreational River Corridor
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 412 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III

- Stream Value Class IV
- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	414	<b>Unit Acres:</b>	72	<b>Alternatives:</b>	4
<b>1999 Aerial Photo:</b>	598_136, 598_137	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,174 MBF
<b>TM-Compartment and Stand:</b>	6-42	<b>Volume Strata Acres:</b>	High 72 Medium Low		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Two-aged management, 50% area retention, clearcut with reserves, 49 acres and uneven-aged management, 50% area retention, group selection, 23 acres

**Logging Method/ Transportation:** Cable / Two temporary roads and one new NFS Road (46031)

## Resource Concerns & Responses

### Fish Habitat/Watershed

- Concern:** Streams 1 and 4 are Class II Channel Type HC3, and Class II Channel Type HC5. Streams 2 and 3 are Class III Channel Type HC3, and Class III Channel Type HC5. Streams 5, 6, and 7 are Class IV, Channel Type HC5.
- Response:** Streams 1 and 4: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the stream or to the top of the V-notch, whichever is greater. Streams 2 and 3: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Streams 5, 6, and 7: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. All Streams : Implement BMPs 12.6, 12.6a, 13.9, and 13.16.
- Concern:** Location makes this stand susceptible to windthrow.
- Response:** Some retention will be left along the stream buffer to provide additional windthrow protection.

### Wildlife/Biological Diversity

- Concern:** Unit is a wildlife travel corridor between high and low elevations. Large amount of high Volstrata in unit. 51 acres of high value deer habitat (HSI >0.60), 10 acres of medium value deer habitat (HSI 4.0-5.0) along with 69 acres of high value marten habitat (HSI >0.89) occur within the unit.
- Response:** 50% area retention would mitigate harvest and help retain corridor and some old-growth characteristics as well as marten and deer habitat. Clearcut harvest would not isolate habitat and area is not an isolated corridor.

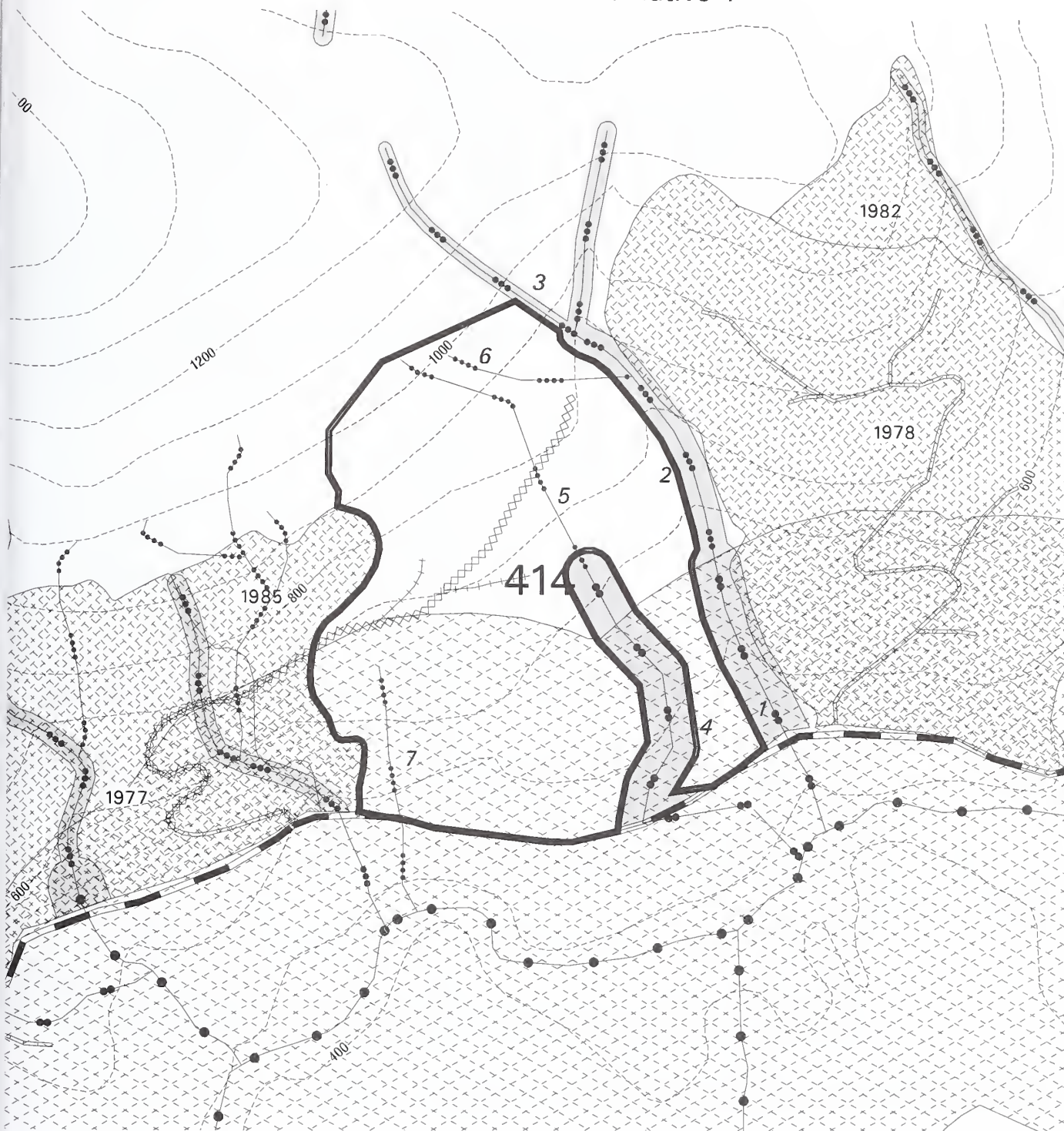
### Recreation/Scenery

- Concern:** Lower portion of unit (31 acres) located within Forest Plan Recreational River Land Use Designation.
- Response:** Measures taken to minimize the potential effects on scenery from timber harvest for this project were limited to the design of Units 414 and 415 within the Kadake Creek Recreational River corridor using a harvest method of 50 percent basal area retention.

**No resource concerns for:** Heritage, Vegetation, Karst, Wetlands, Soils

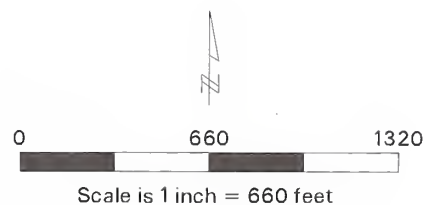


# Kuiu Unit 414 Alternative 4



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Recreational River Corridor
- Proposed Unit 414 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III

- Stream Value Class IV
- Open NFS Roads
- Closed NFS Roads
- Decomissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	415	<b>Unit Acres:</b>	27	<b>Alternatives:</b>	2, 4
<b>1999 Aerial Photo:</b>	598_95, 598_94	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	405 MBF
<b>TM-Compartment and Stand:</b>	6-43	<b>Volume Strata Acres:</b>	High 24 Medium 0 Low 3		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Two-aged management, 50% area retention, clearcut with reserves

**Logging Method/ Transportation:** Cable and Shovel / One temporary road, one existing NFS Road (6415), and one reconditioned NFS Road (46091)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class I, Channel Type MC2 for the lower section and Class II, Channel Type MC2 for the upper section.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the channel, or to the top of the side-slope break, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Some retention will be left along the stream buffer to provide additional windthrow protection.

### Wildlife/Biological Diversity

**Concern:** Unit is wildlife travel corridor between high and low elevations. Large amount of high Volstrata in unit. 25 acres of high value deer habitat (HSI >0.60) and 25 acres marten value habitat (HSI >0.89) values occur within the unit.

**Response:** Retention of 50% area would mitigate harvest by retaining some old-growth characteristics, maintaining travel corridor and retaining marten and deer habitat.

### Recreation/Scenery

**Concern:** Lower portion of unit (18 acres) located within Forest Plan Recreational River land use designation.

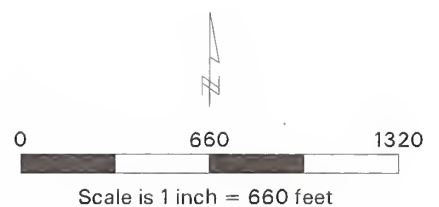
**Response:** Measures taken to minimize the potential effects on scenery from timber harvest for this project were limited to the design of Units 414 and 415 within the Kadake Creek Recreational River corridor using a harvest method of 50 percent area retention.

**No resource concerns for:** Soils, Karst, Wetlands, Heritage, Vegetation

# Kuiu Unit 415 Alternative 2,4



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Extreme Hazard Soils           |  | Decommissioned Roads     |
|  | High Hazard Soils              |  | Proposed NFS Roads       |
|  | Recreational River Corridor    |  | Reconditioned Roads      |
|  | Proposed Unit 415 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	416	<b>Unit Acres:</b>	44	<b>Alternatives:</b>	2, 3, 4, 5
<b>1999 Aerial Photo:</b>	598_95, 598_94	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	1,409 MBF
<b>TM-Compartment and Stand:</b>	6-44	<b>Volume Strata Acres:</b>	High 43 Medium 1 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road and one reconditioned NFS Road (46091)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class II, Channel Type MC2.  
Stream 2 is Class IV, Channel Type HC5.  
Stream 3 is Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the channel, or to the top of the side-slope break, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2 and 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

### Wildlife/Biological Diversity

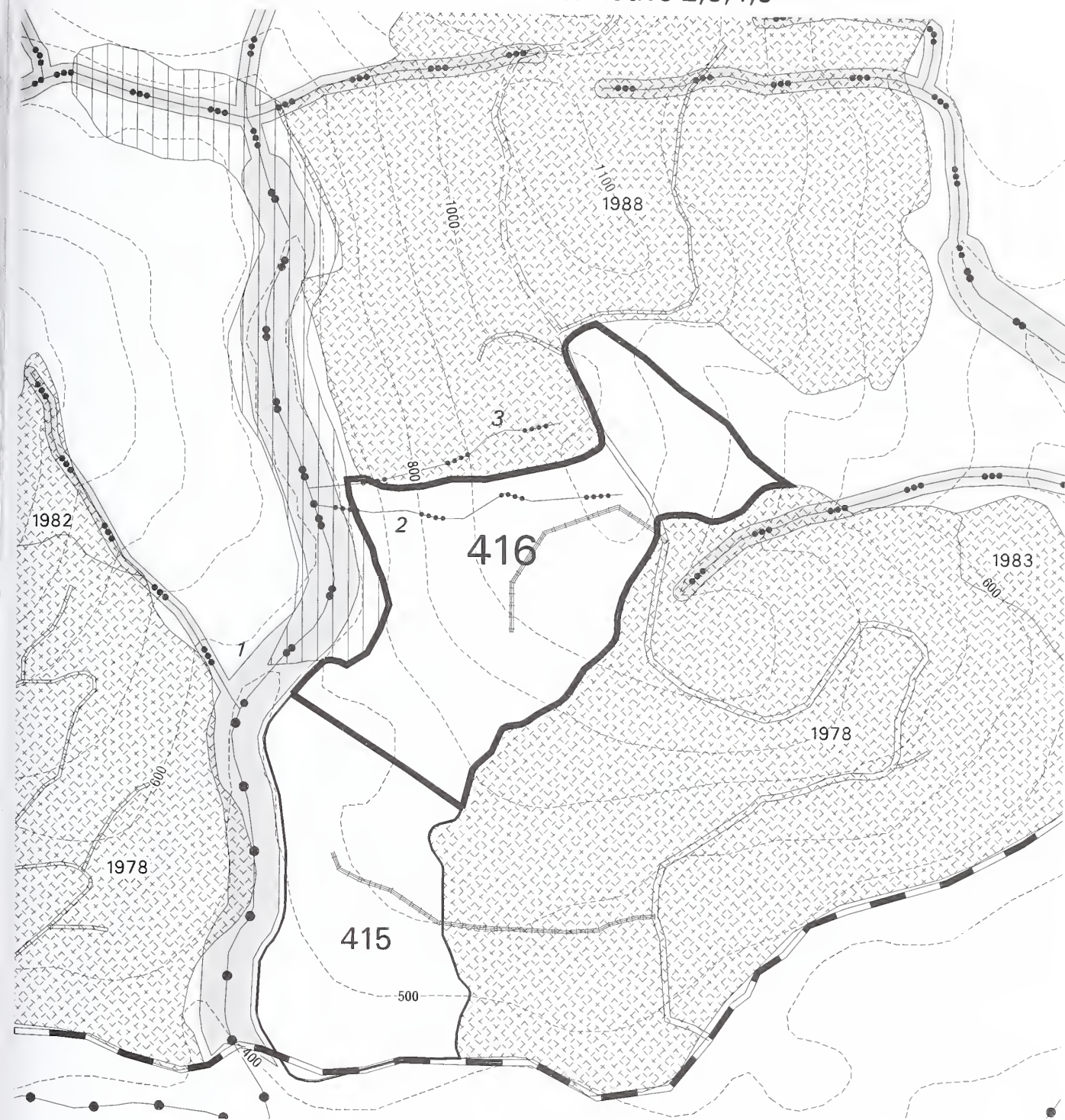
**Concern:** Unit has high Volstrata. 13 acres of high value deer habitat (HSI >0.60), 23 acres of medium value deer habitat (HSI 4.0 to 5.0) along with 25 acres of high value marten habitat (HSI >0.89) occur within the unit.

**Response:** Clearcut harvest would not isolate habitat and area is not an isolated corridor.

**No resource concerns for:** Soils, Scenery, Heritage, Vegetation, Karst, Wetlands



# Kuiu Unit 416 Alternative 2,3,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 416 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval

0 660 1320

Scale is 1 inch = 660 feet



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	417	<b>Unit Acres:</b>	24	<b>Alternatives:</b>	2, 3, 5
<b>1999 Aerial Photo:</b>	198_70, 198_71	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	387 MBF Alt 3 774 MBF Alt 2 & 5
<b>TM-Compartment and Stand:</b>	7-124	<b>Volume Strata Acres:</b>	High 24 Medium 0 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alts 2 and 5 Even-aged management, clearcut

Alt 3 Two-aged management, 50% area retention, clearcut with reserves

**Logging Method/ Transportation:** Cable / One reconditioned NFS Road (46094)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC3  
Streams 2, 3, and 4 are Class IV, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2, 3, and 4: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

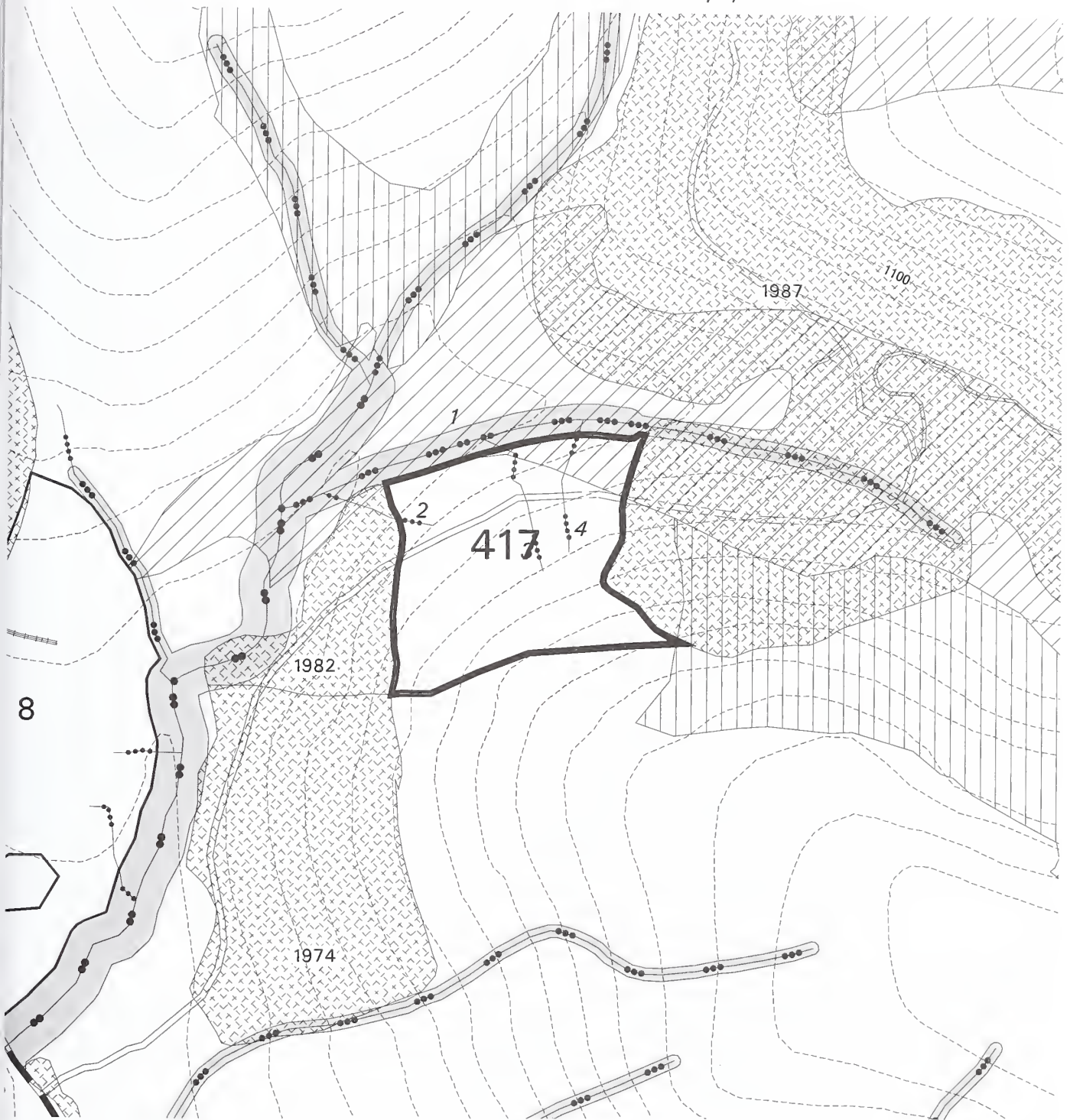
### Wildlife/Biological Diversity

**Concern:** High amount of animal use was reported. High Volstrata exists within the unit. Area is wildlife travel corridor between high and low elevations. 3 acres of high value deer habitat (HSI >0.60), 15 acres of medium value deer habitat (HSI 4.0 to 5.0) along with 24 acres of high value marten habitat (HSI >0.89) occur within the unit.

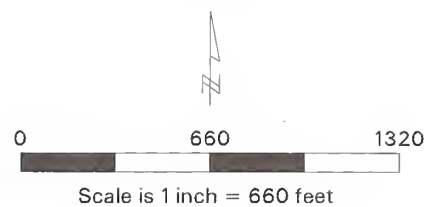
**Response:** 50% area retention in Alternative 3 would mitigate the harvest of old-growth habitat by retaining corridor function and retaining some old-growth characteristics. Even-aged prescriptions in Alternatives 2 and 5 would remove the travel corridor.

**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage, Vegetation

# Kuiu Unit 417 Alternative 2,3,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decomissioned Roads      |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 417 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	418	<b>Unit Acres:</b>	45	<b>Alternatives:</b>	2, 4, 5
<b>1999 Aerial Photo:</b>	198_70, 198_71	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	344 MBF Alt 2 687 MBF Alts 4, 5
<b>TM-Compartment and Stand:</b>	7-125	<b>Volume Strata Acres:</b>	High 17 Medium 14 Low 14		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Alt 2 Two-aged management, 50% area retention, clearcut with reserves

Alts 4 and 5 Even-aged management, clearcut

**Logging Method/ Transportation:** Shovel / One temporary road and one existing NFS Road (6402)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class II, Channel Type MC2.  
Stream 2 is Class IV, Channel Type HC5.  
Stream 3 is Class IV, Channel Type HC5.  
Stream 4 is Class III, Channel Type HC5.

**Response:** Stream 1: No programmed commercial timber harvest within the RMA, which is defined as within 100 feet of the channel, or to the top of the side-slope break, whichever is greater. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2 and 3: Split yard away from Class IV streams whenever possible. Buck, limb, and top felled trees clear of streamcourses. Remove any slash deposited in streamcourse as a result of timber harvest activities. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Stream 4: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1 and 4: Alt 2 Some retention will be left along the stream buffer to provide additional windthrow protection. In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wildlife/Biological Diversity

**Concern:** High amount of animal use was reported. High, medium and low Volstrata exists within the unit. Wildlife corridor exists between high and low elevations. 17 acres of high value deer habitat (HSI >0.60), 11 acres of medium value deer habitat (HSI 4.0 to 5.0) along with 17 acres of high value marten habitat (HSI >0.89) occur within the unit.

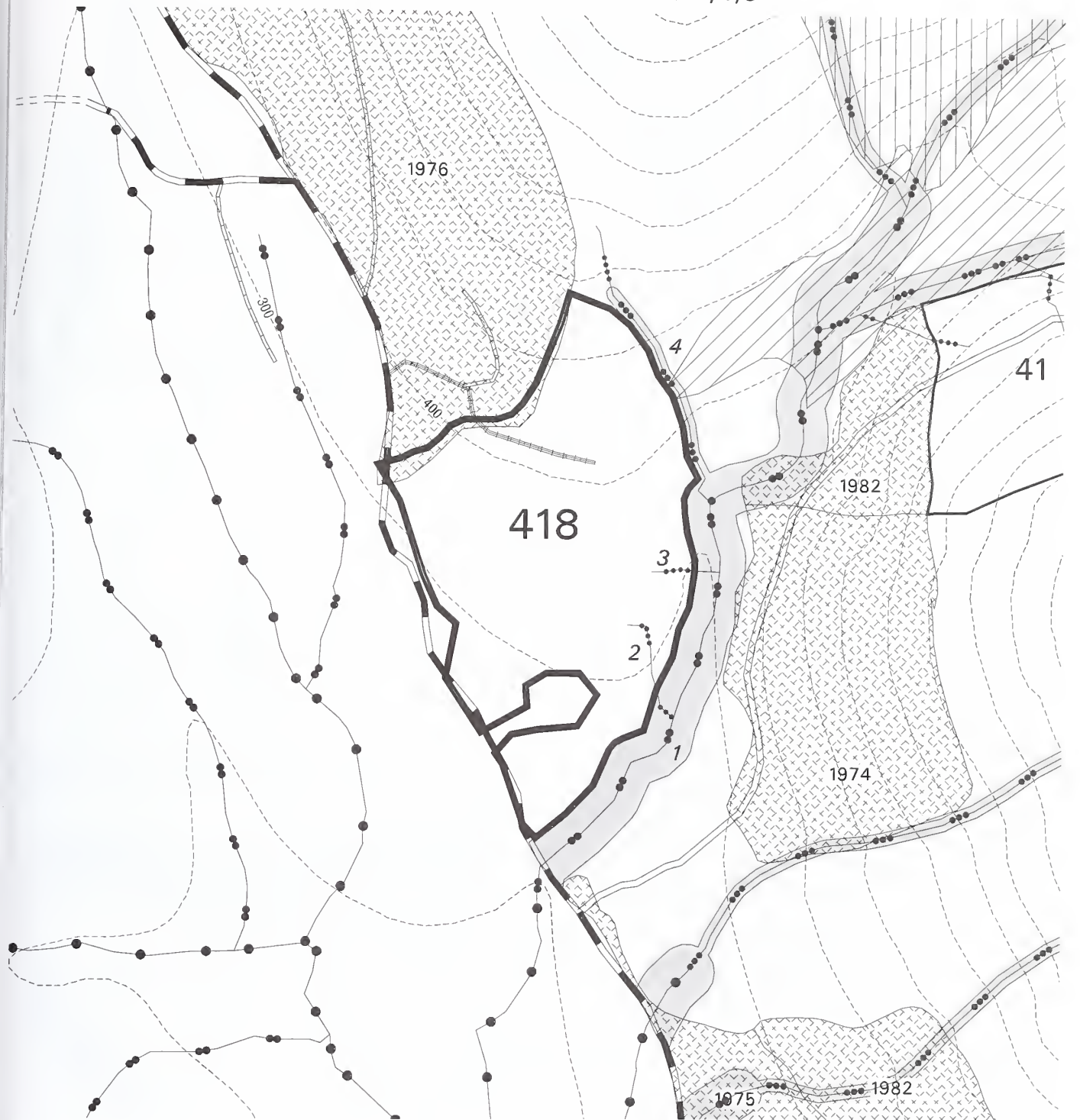
**Response:** 50% area retention in Alternative 2 would mitigate the harvest by retaining function of the travel corridor. Additionally, it would reduce the impacts to high volume old-growth by retaining some of the characteristics. Deer and marten habitat values would be retained.

Clearcut harvest in Alternatives 4 and 5 would remove the travel corridor.

**No resource concerns for:** Scenery, Heritage, Soils, Vegetation, Karst, Wetlands

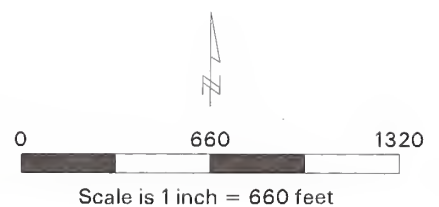


# Kuiu Unit 418 Alternative 2,4,5



- Existing Managed Stands
- Riparian Management Area
- Forest Plan Old-Growth Reserve
- Extreme Hazard Soils
- High Hazard Soils
- Proposed Unit 418 Boundary
- Adjacent Proposed Units
- Stream Value Class I
- Stream Value Class II
- Stream Value Class III
- Stream Value Class IV

- Open NFS Roads
- Closed NFS Roads
- Decommissioned Roads
- Proposed NFS Roads
- Reconditioned Roads
- Proposed Temporary Roads
- 100-ft. Contour Interval





## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	503	<b>Unit Acres:</b>	95	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	198_102, 103, 104	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	2,637 MBF
<b>TM-Compartment and Stand:</b>	2-128	<b>Volume Strata Acres:</b>	High 65 Medium 30 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / One temporary road, recondition and extend NFS Road (6427)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream reach 1 is Class III, Channel Type HC6.  
Stream reach 2 is Class II, Channel Type HC6.  
Stream 3 is Dean Creek and is Class II, Channel Type HC3.  
Stream 4 is Dean Creek and is Class III, Channel Type HC3.  
Stream 5 is Class III, Channel Type HC5.

**Response:** Streams 1, 4, and 5: No programmed commercial timber harvest within the RMA, which is defined as the top of the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.  
Streams 2 and 3: No timber harvest within 100 feet of stream, or within the v-notch (side slope breaks). Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1, 2, 3, 4 and 5 in Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wildlife/Biological Diversity

**Concern:** High animal use. High use of the game trails as a wildlife travel corridor exists between high and low elevations. Large amount of high and medium Volstrata would be harvested in this unit. 5 acres of high value deer habitat (HSI >0.60), 67 acres of medium value deer habitat (HSI 4.0 to 5.0) along with 63 acres of high value marten habitat (HSI >0.89) within unit.

**Response:** Concerns not addressed. Harvest would eliminate travel corridors between low and high elevations in this unit.

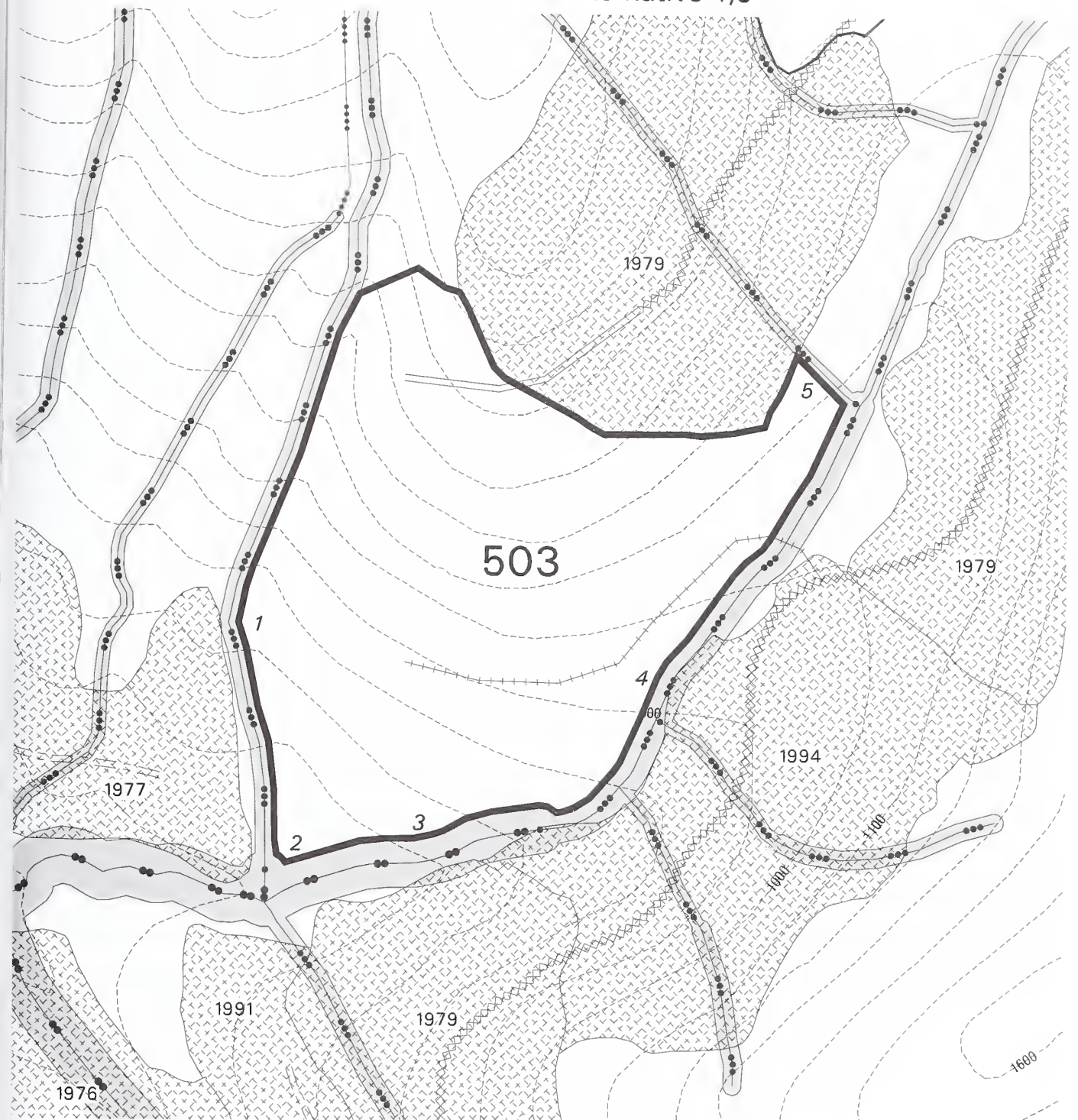
### Vegetation/Timber

**Concern:** Even-aged opening size is close to 100 acres.

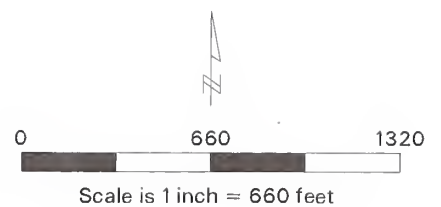
**Response:** During layout ensure harvest unit does not exceed 100 acres.

**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage

# Kuiu Unit 503 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Stream Value Class IV    |
|  | Riparian Management Area       |  | Open NFS Roads           |
|  | Forest Plan Old-Growth Reserve |  | Closed NFS Roads         |
|  | Recreational River Corridor    |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 503 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |



## Kuiu Timber Sale Unit Card

<b>Unit Number:</b>	504	<b>Unit Acres:</b>	25	<b>Alternatives:</b>	4, 5
<b>1999 Aerial Photo:</b>	198_102, 198_103	<b>Land Use Designation:</b>	Timber Production	<b>Net Timber Volume:</b>	483 MBF
<b>TM-Compartment and Stand:</b>	2-129	<b>Volume Strata Acres:</b>	High 14 Medium 11 Low 0		

**Existing Stand Condition:** Old-growth

**Silvicultural Prescription:** Even-aged management, clearcut

**Logging Method/ Transportation:** Cable / Recondition one NFS Road (6427)

## Resource Concerns & Responses

### Fish Habitat/Watershed

**Concern:** Stream 1 is Class III, Channel Type HC6.  
Stream 2 is Class III, Channel Type HC5.  
Stream 3 is Class III, Channel Type HC2.

**Response:** All Streams: No programmed commercial timber harvest within the RMA, which is defined as the V-notch. Implement BMPs 12.6, 12.6a, 13.9, and 13.16.

**Concern:** Location makes this stand susceptible to windthrow.

**Response:** Streams 1 and 2: In Alts 4 and 5, the riparian buffer will be protected by feathering the edge for a distance of 50 horizontal feet where trees less than 16 inches DBH and those trees that cannot be felled away from the buffer will be retained.

### Wildlife/Biological Diversity

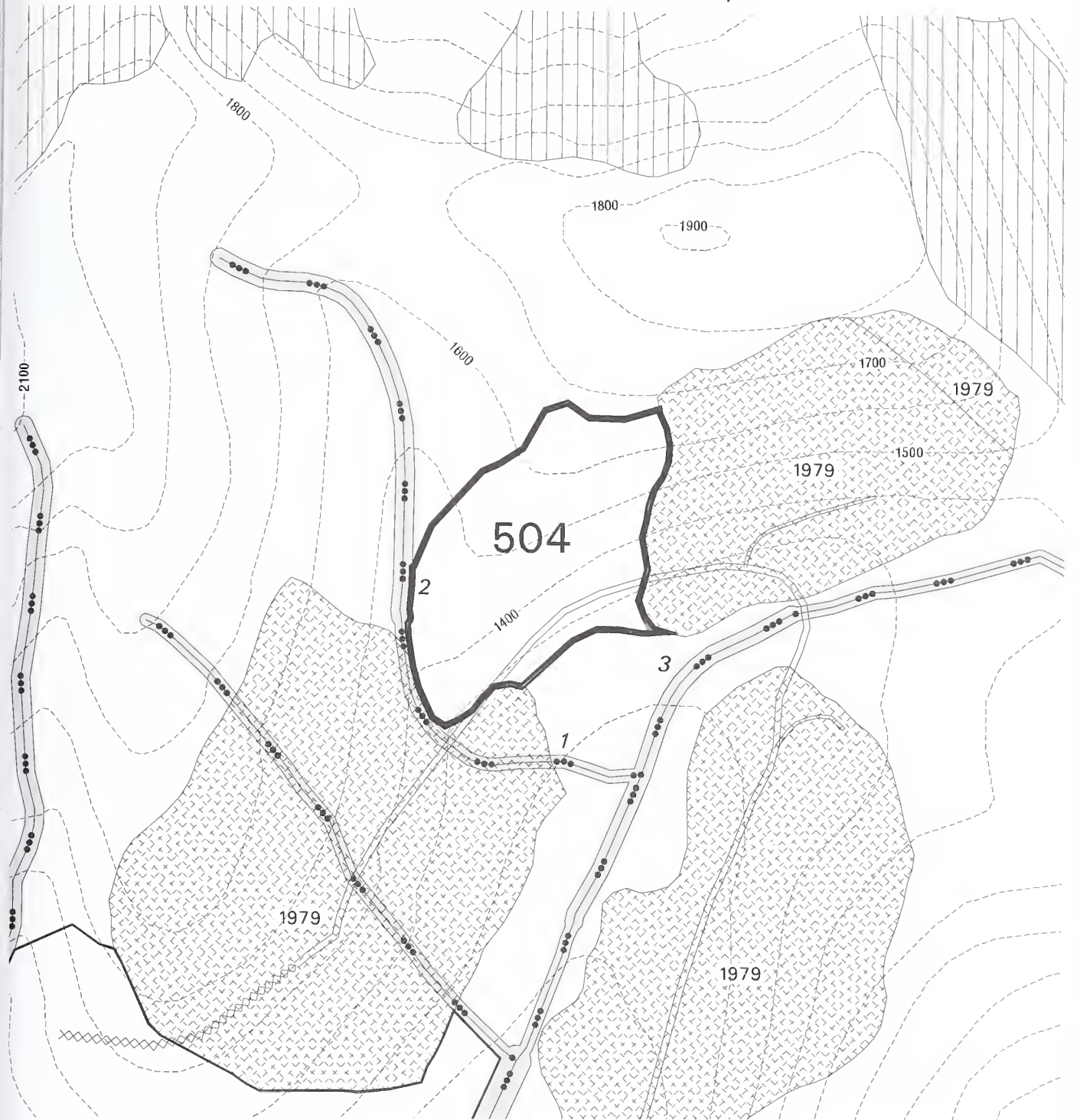
**Concern:** High animal use. High use of the game trails as a wildlife travel corridor between high and low elevation exists within this unit. Large amount of high and medium Volstrata would be harvested in this unit. 11 acres of medium value deer habitat (HSI 4.0 to 5.0) and 13 acres of high value marten habitat (HSI >0.89) occur within the unit.

**Response:** Clearcut harvest would remove travel corridors between low and high elevations with the harvest of this unit.

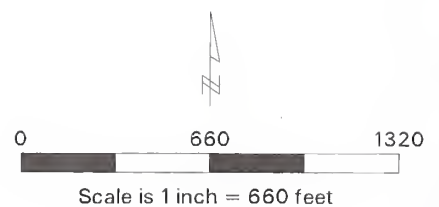
**No resource concerns for:** Soils, Wetlands, Karst, Scenery, Heritage, Vegetation



# Kuiu Unit 504 Alternative 4,5



- |  |                                |  |                          |
|--|--------------------------------|--|--------------------------|
|  | Existing Managed Stands        |  | Open NFS Roads           |
|  | Riparian Management Area       |  | Closed NFS Roads         |
|  | Forest Plan Old-Growth Reserve |  | Decommissioned Roads     |
|  | Extreme Hazard Soils           |  | Proposed NFS Roads       |
|  | High Hazard Soils              |  | Reconditioned Roads      |
|  | Proposed Unit 504 Boundary     |  | Proposed Temporary Roads |
|  | Adjacent Proposed Units        |  | 100-ft. Contour Interval |
|  | Stream Value Class I           |  |                          |
|  | Stream Value Class II          |  |                          |
|  | Stream Value Class III         |  |                          |
|  | Stream Value Class IV          |  |                          |





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# Road Cards



## Road Management Objectives

### Intended Purpose /Future Use

The road management objectives (RMOs) presented in this appendix establishes the intended purpose and display design maintenance and operation criteria (as per FSH 7709.55) for each National Forest System road associated with timber harvest activities for this project. The information on the RMO form is part of a permanent database that can be updated periodically as access needs, issues, and budgets change. Proposed new roads and existing roads with planned reconstruction or maintenance have a second section with site specific design criteria that will be used during design, construction, and initial monitoring of any road work proposed in this document. See Figure B-2 for a map of the Kuiu Timber Sale Area showing existing road locations.

### General Design Criteria and Elements

The general design criteria provide various descriptions of the type of road and the intended purpose and future use of the road. From this information, the maintenance and operation criteria can be developed. This information is critical for determining whether a Corps of Engineer's permit will be required for segments of road crossing wetlands. Roads built solely for silvicultural purposes do not require these permits.

### Maintenance Criteria

The maintenance criteria include a discussion of how the road is to be maintained, centering on three strategies:

- **Active:** provide frequent cleanout of ditches and catch basins to assure controlled drainage. Control roadside brush to maintain sight distance. Grade as needed to maintain crown and running surface.
- **Storm Proof:** provide water bars, rolling dips, out sloping, etc., to assure controlled runoff until any needed maintenance can be performed on the primary drainage system. Control roadside brush to maintain passage.
- **Storage:** remove or bypass all drainage structures to restore natural drainage patterns, add water bars and revegetate as needed to control runoff.

The **active** maintenance strategy is applied to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. These roads are assigned Maintenance Level 3. The active maintenance strategy will also at times be applied to roads intended only for use by high clearance vehicles, or Maintenance Level 2 roads. This will usually be the case when log haul is expected in the near future.

An intermediate maintenance strategy is to **storm proof**, or stabilize the road, by providing roadway features such as drivable water bars



and out sloping to control runoff in case the primary drainage system of culverts and ditches is overwhelmed during a storm event. Each culvert will be evaluated as to where the water would go if the culvert were to fail to carry the high flow. A water bar or out slope at this location will minimize the potential for erosion of long stretches of ditch line or roadway. This is intended to be the primary maintenance strategy applied to roads assigned Maintenance Level 2.

**Storage** is intended to be the primary maintenance strategy on intermittent use roads during their closure cycle. Road storage is defined in FSH 5409.17 as “the process/action of closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use.” In this strategy, the bridges and culverts on live streams are completely removed to restore natural drainage patterns. Cross drains and ditch relief culverts will be bypassed with deep water bars but may be left in place to minimize the cost of re-using these roads in the future. Roads in storage are left in a self-maintaining state in order to use more road maintenance funds on the open drivable roads on the island. Maintenance Level 1, closure and basic custodial maintenance, is assigned.

The interdisciplinary team went through a process to define road management considerations, leading to a maintenance strategy to be applied to each road in the Kuiu Timber Sale Area. Figure B-2 shows the desired future condition of each road in the project area as a result of the process. The work needed to meet the objectives can be accomplished on the roads along the haul route in these timber sales. Work needed on other roads to meet the desired objective will be scheduled as funding allows.

## **Operation Criteria**

The operations criteria include a presentation of each of the five traffic management strategies identified in FSM 7731 (encourage, accept, discourage, prohibit, and eliminate) to be applied to different traffic classes on each road. The traffic management narrative describes what actions will be taken in order to apply each strategy. For example, if the strategy “eliminate” is prescribed for standard passenger and high clearance vehicles, the narrative describes the method to accomplish this, such as removal of stream crossing structures, gating, etc.

## **Site-specific Design Criteria**

The site-specific design criteria include road location objectives, wetland information, erosion control, proposed rock borrow sources, and all streams within the project area with proposed construction or rehabilitation of stream crossing structures. Site-specific design criteria for the proposed reconstruction of designated roads for this project include timing restrictions for construction activities (Table B-3).

Table B-3. Stream classes, species of concern, and construction timing windows for stream crossings on designated roads proposed for reconstruction

ROAD #	MILE POST	STREAM CLASS	SPECIES OF CONCERN	CONSTRUCTION TIMING WINDOW
6417	0.119	II	CT	July 18 -- Aug 15
6417	0.789	II	DV	No restriction
6417	0.793	II	DV	No restriction
6417	0.925	I	SS, DV	June 1 -- Sept 1
6417	1.209	I	SS, CT, DV	July 18 -- Aug 15
6417	1.456	I	SH, PS, DV	July 18 -- Aug 1
6427	NONE	NONE	NONE	No restriction
46091	NONE	NONE	NONE	No restriction
46094	NONE	NONE	NONE	No restriction
6422	NONE	NONE	NONE	No restriction
6443	0.125	I	SS	June 1 -- Sept 1

CT = cutthroat, DV = Dolly Varden, SS = silver salmon, SH = steelhead, PS = pink salmon

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# Kuiu Timber Sale

Figure B-2  
Proposed Road Maintenance Levels

## Legend

- Productive Old-Growth
- Managed Stands
- Non-National Forest
- Lakes/Saltwater
- Project Area Boundary
- Suitable for Passenger Vehicles
- High Clearance Vehicles
- Basic Custodial Care (Closed)
- 500ft Contour Interval
- Stream Value Class I & II





## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		ML OG RM SM TM	
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>		
6402	Kuiu Mainline	Saginaw Bay LTF				
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>	
0.00	31.92	Existing	PA D1,C1, PB C6		'98 598-127-128, 298-123, 198-78, 105 to 112, 198-64 to 70, 298-138, 598-145 to 147, 83, 698-4, 69,798-196, 133, 13, 498-140, 139, 29, 30	

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	16'	30	Lowboy	Lowboy

### Intended Purpose/Future Use

Serves as main arterial road from Saginaw Bay to Threemile Arm, will remain open to all traffic to junction with 6434.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	28.75	3	3
28.75	31.92	3	1

### Maintenance Narrative

Road will be maintained to facilitate travel passenger car at 30 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	Yes	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	All motorized vehicles on open segment	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed segment	
	<b>Eliminate:</b>	Motorized vehicles on closed segment	

### Travel Management Narrative

Road will remain open to all traffic except for last 3 miles. Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_

District Ranger

Date \_\_\_\_\_



## Road Management Objective

<b>Project</b>		<b>System</b>		<b>Land Use Designation</b>
Kuiu		Kuiu		OG TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
6404	Rowan Bay	Rowan Bay Sortyard		6402 MP 14
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	4.43	Existing	PA C1 NW	'98 198-66, 118 to 122

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	16'	30	Lowboy	Lowboy

#### Intended Purpose/Future Use

Road will be maintained to facilitate travel passenger car at 30 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

#### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	4.43	3	3

#### Maintenance Narrative

Road will be maintained to facilitate travel passenger car at 30 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

#### Operation Criteria

<b>Highway Safety Act:</b>	Yes	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	Encourage:	Hikers, bicycles	
	Accept:	All motorized vehicles	
	Discourage:	N/A	
	Prohibit:	N/A	
	Eliminate:	N/A	

#### Travel Management Narrative

Road will remain open to all traffic.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date



## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		TM	
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>		
6413	South Fork Saginaw	6402 MP 2				
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>	
0.00	2.84	Existing	PA D1 SE		'98 598-128 to 132	

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

#### Intended Purpose/Future Use

Access for silvicultural activities.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	2.84	2	1

#### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

#### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b> Kuiu			<b>System</b> Kuiu		<b>Land Use Designation</b> OG RR TM		
<b>Route No</b> 6415		<b>Route Name</b> Kuiu Connection		<b>Begin Terminus</b> 6402 MP 13		<b>End Terminus</b> 6402 MP 2	
<b>Begin MP</b> 0.00		<b>Length</b> 18.51		<b>Status</b> Existing		<b>Map Quarter Quad</b> PA C1 NW, PA D1 SE, SW	
<b>Photo year, roll, photos</b> '98 598-128, 103, 698-24, 50, 798-178 to 183, 698-57,16, 598-94, 137, 298-132 to 135							

### General Design Criteria and Elements

<b>Functional Class</b> Local	<b>Service Life</b> LI	<b>Surface</b> Shot rock	<b>Width</b> 16'	<b>Design Speed</b> 30	<b>Critical Vehicle</b> Lowboy	<b>Design Vehicle</b> Lowboy
----------------------------------	---------------------------	-----------------------------	---------------------	---------------------------	-----------------------------------	---------------------------------

### Intended Purpose/Future Use

Serves as part of loop road on north Kuiu between Rowan and Saginaw Bays.

### Maintenance Criteria

<b>Bmp</b>	<b>Emp</b>	<b>Operational Maintenance Level (Current Condition)</b>	<b>Objective Maintenance Level (Desired Future Condition)</b>
0.00	18.51	3	3

### Maintenance Narrative

Road will be maintained to facilitate travel passenger car at 30 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	Yes	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	All motorized vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	N/A	

### Travel Management Narrative

Keep road open to all traffic.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
6417	Security Bay Connection	6402 MP 7		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	3.67	Existing	PA D1 SW	'98 198-107, 108, 74, 298-127 to 129

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Access for silvicultural activities. Close road until needed in the future.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	3.67	1	
0.00	2.50		2
0.00	3.67		1

### Maintenance Narrative

When road is reopened, it will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		TM	
<b>Route No</b>	<b>Route Name</b>		<b>Begin Terminus</b>		<b>End Terminus</b>	
6418	Upper Saginaw Bay		6402 MP 3			
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>	
0.00	1.70	Existing	PA D1 SW		'98 298-123, 124, 198-77	

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Access for silvicultural activities. Close road until needed in the future.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)	Alaska Forest Practices Act Class
0.00	1.70	2		Active
0.00	1.70		1	Closed

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date



## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		TM	
<b>Route No</b>	<b>Route Name</b>		<b>Begin Terminus</b>		<b>End Terminus</b>	
6422	Saginaw Bay		6417 MP 2			
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>	
0.00	0.24	Existing	PA D1 SW		'98 198-73	

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Access for silvicultural activities. Close road until needed in the future.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	0.24	1	
0.00	0.24		2
0.00	0.24		1

### Maintenance Narrative

When road is reopened, it will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
6425	Dean Creek	6402 MP 5		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	6.47	Existing	PA D1 SW, NW	'98 198-105, 104, 198-219 to 222, 198-100

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	16'	20	Lowboy	Lowboy

#### Intended Purpose/Future Use

Access for silvicultural activities. Close road at junction with road 46251 until needed in the future.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	4.76	2	2
4.76	6.47	1	1

#### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 20 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	Yes	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

#### Travel Management Narrative

The first part of the road will remain open to all traffic and the last 1.71 miles of road will remain closed.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>		<b>System</b>	<b>Land Use Designation</b>
Kuiu		Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>	<b>End Terminus</b>
6427	Security Bay	6425 MP 2	
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>
0.00	3.44	Existing	PA D1 SW
			<b>Photo year, roll, photos</b>
			'98 198-103, 104, 81

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Access for silvicultural activities. Close road until needed in the future.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.15	2	
0.00	3.44		2
0.00	3.44		1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles on open section	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		TM	
<b>Route No</b>	<b>Route Name</b>		<b>Begin Terminus</b>		<b>End Terminus</b>	
6448	Saginaw Camp		Saginaw Bay LTF		Pentilla's Camp	
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>	
0.00	0.81	Existing	PA D1 SW		'98 598-126, 298-119	

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	16'	10	Lowboy	Lowboy

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

<b>Bmp</b>	<b>Emp</b>	<b>Operational Maintenance Level (Current Condition)</b>	<b>Objective Maintenance Level (Desired Future Condition)</b>
0.00	0.81	2	2

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	All motorized vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	N/A	

### Travel Management Narrative

Road will remain open to all traffic.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date



## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46021	Security Ridge	6402 MP 4.59		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	1.38	Existing	PA D1 SW	'98 198-78, 106

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity. Serves as telephone receiving area.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.38	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	RR TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46091	Wilder	6415 MP 5		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	1.58	Existing	PA D1 SE	'98 598-94, 95

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

#### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.58	1	
0.00	1.10		2
0.00	1.58		1

#### Maintenance Narrative

When road is reopened, it will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

#### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46094	Burke Wind	6402 MP 13		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	1.58	Existing	PA C1 NW, PA D1 SW	'98 198-69, 70, 71

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.58	1	
0.00	0.80		2
0.00	1.58		1

### Maintenance Narrative

When road is reopened, it will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain first 0.80 miles as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46096	Shorty	6413 MP 2		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	3.80	Existing	PA D1 SW, SE	'98 598-132, 198 to 102

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

#### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	3.80	2	1

#### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles when open	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	Motorized vehicles on closed section	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

#### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_ Date \_\_\_\_\_  
District Ranger



## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	OG TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46430		6415 MP 3.50		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	2.56	Planned		

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	2.56	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Site Specific Design Criteria

### ***Road 46030***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the existing Road 6415. The 6,100 feet follows the existing roadbed of a decommissioned temporary road. At about 6,100 feet the road leaves the existing decommissioned roadbed and heads west across a muskeg forest mix saddle area toward the next hillside that contains the timber units. At about 6,900 feet a stream crossing is needed using a 50 foot log stringer bridge. At about 7,400 feet until the end of the road, the road is slowly gaining elevation on timbered hillsides to access the timber units.

**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). Most of this road segment would be constructed as timber access road.

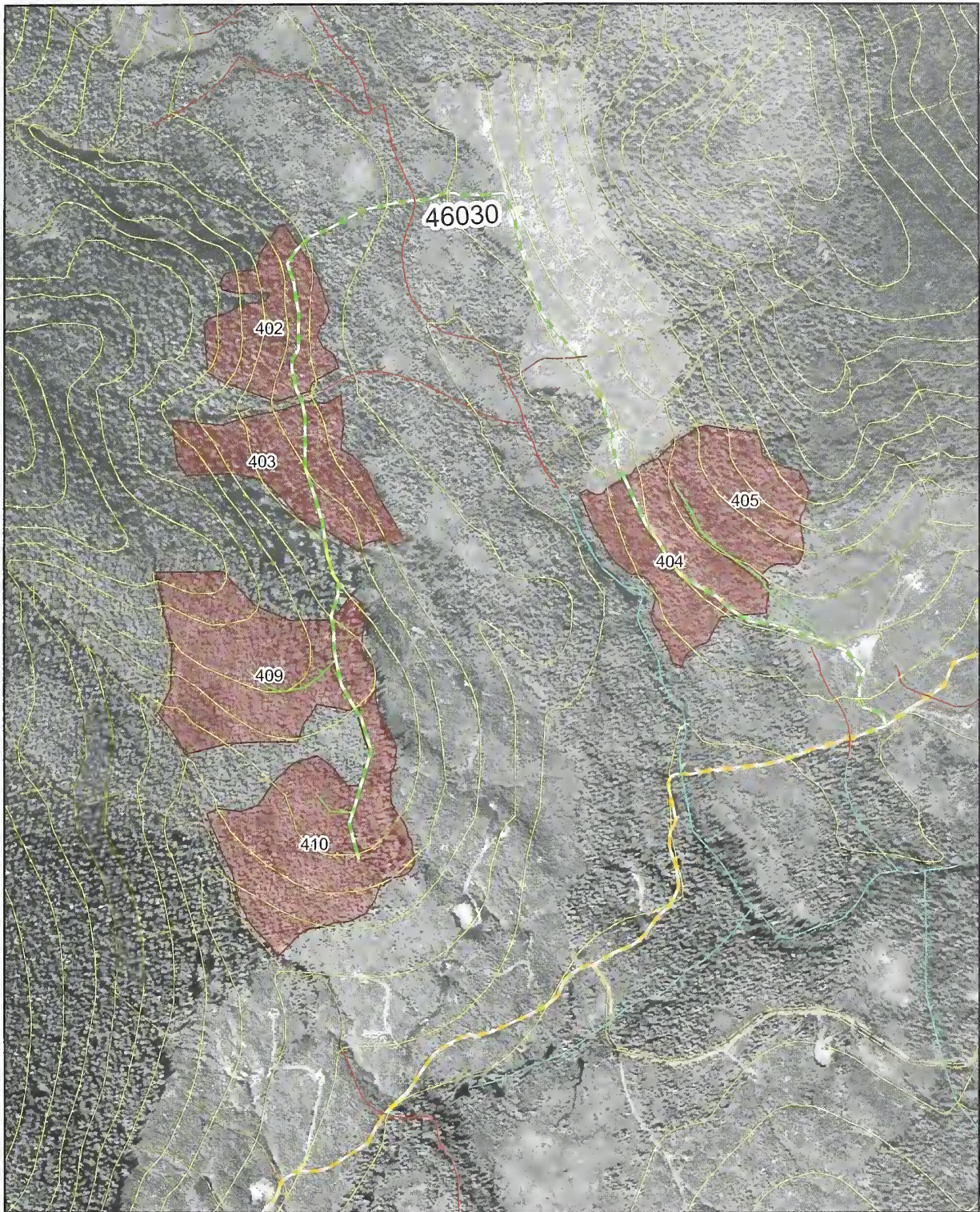
**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

#### **STREAM CROSSINGS:**

MP 1.35 AHMU II Channel Type MM1 BF Width 17 ft Incision 13 ft Substrate bedrock, cobble Gradient 3% Structure 50' Log Stringer Bridge Narrative: Mostly bedrock. No timing required.





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Road 46030

### Legend

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| Units                                 | Basic Custodial Care (Closed) (ML1)   |
| Contours 100 ft.                      | New NFS Designated Construction (ML2) |
| Stream Class I                        | Reconditioned                         |
| Stream Class II                       | New Temporary Construction            |
| Stream Class III                      |                                       |
| Suitable for Passenger Vehicles (ML3) |                                       |
| High Clearance Vehicles (ML2)         |                                       |

0 660 1,320 2,640 Feet  
1 inch equals 1,320 feet



## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	OG TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46031		6415 MP 3.92		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	0.67	Planned		

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	L1	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	0.67	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date



## Site Specific Design Criteria

### ***Road 46031***

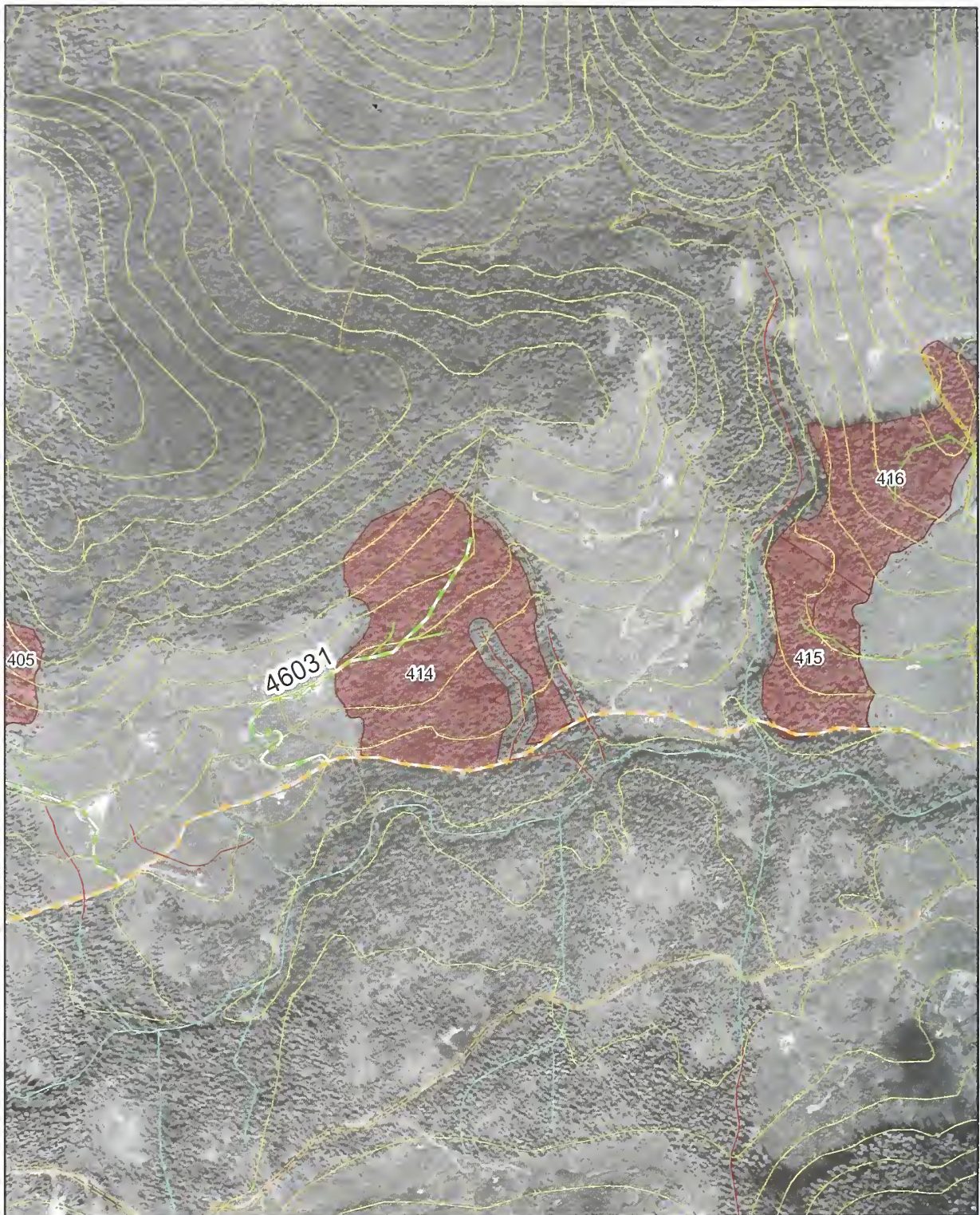
**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the existing Road 6415. The first 2,000 feet follows the existing roadbed of a decommissioned temporary road. At the end of the existing decommissioned roadbed the new road heads to the northeast across timbered land on a sideslope gaining elevation till it accesses unit 414.

**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). Most of this road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.



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# Legend

- Units
- Contours 100 ft.
- Stream Class I
- Stream Class II
- Stream Class III
- Suitable for Passenger Vehicles (ML3)
- High Clearance Vehicles (ML2)
- Basic Custodial Care (Closed) (ML1)
- New NFS Designated Construction (ML2)
- Reconditioned
- New Temporary Construction

0      660      1,320      2,640  
 Feet  
 1 inch equals 1,320 feet

Road 46031



## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	OG TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46032		46096 MP 1.10		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	1.39	Planned		

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.39	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Site Specific Design Criteria

### ***Road 46032***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the existing Road 46096. The first 1,500 feet steadily gains elevation through a 15 year old clearcut. The road then enters timber sideslope and continues to gain elevation at an average of 10% to 15%. The majority of the road is located on sideslope averaging about 40 to 50%.

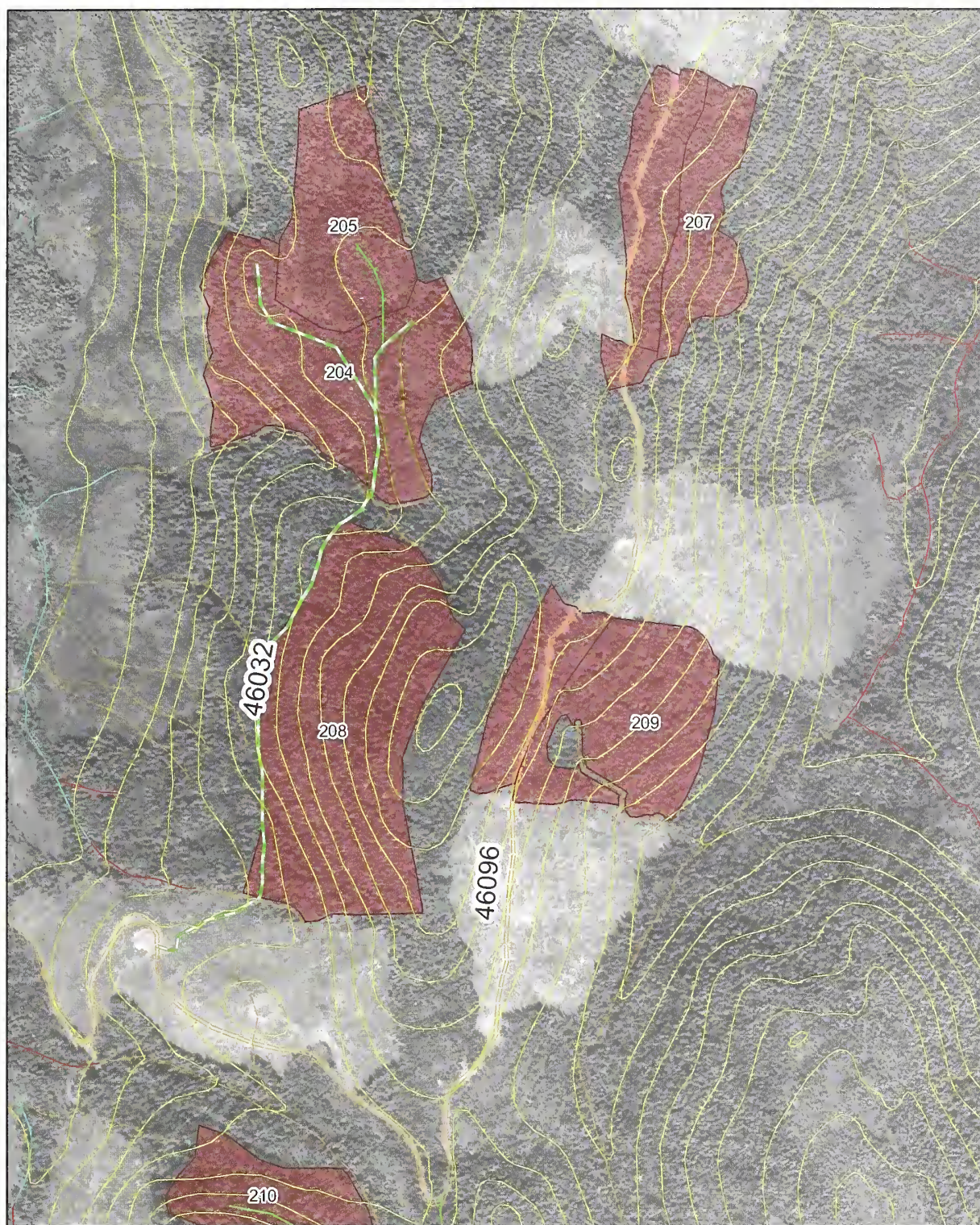
**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). This road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.





1 inch equals 1,320 feet

45030 mvd 07 00 07 50



## Road Management Objective

<b>Project</b> Kuiu			<b>System</b> Kuiu	<b>Land Use Designation</b> OG TM
<b>Route No</b> 46033	<b>Route Name</b>		<b>Begin Terminus</b> 46032 MP 1.10	<b>End Terminus</b>
<b>Begin MP</b> 0.00	<b>Length</b> 0.17	<b>Status</b> Planned	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>

### General Design Criteria and Elements

<b>Functional Class</b> Local	<b>Service Life</b> LI	<b>Surface</b> Shot rock	<b>Width</b> 14'	<b>Design Speed</b> 10	<b>Critical Vehicle</b> Log truck	<b>Design Vehicle</b> Log truck
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### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	0.17	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_ Date \_\_\_\_\_  
District Ranger

## Site Specific Design Criteria

### ***Road 46033***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the planned Road 46032. The majority of the road is located on sideslope averaging about 40 to 50%.

**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). This road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

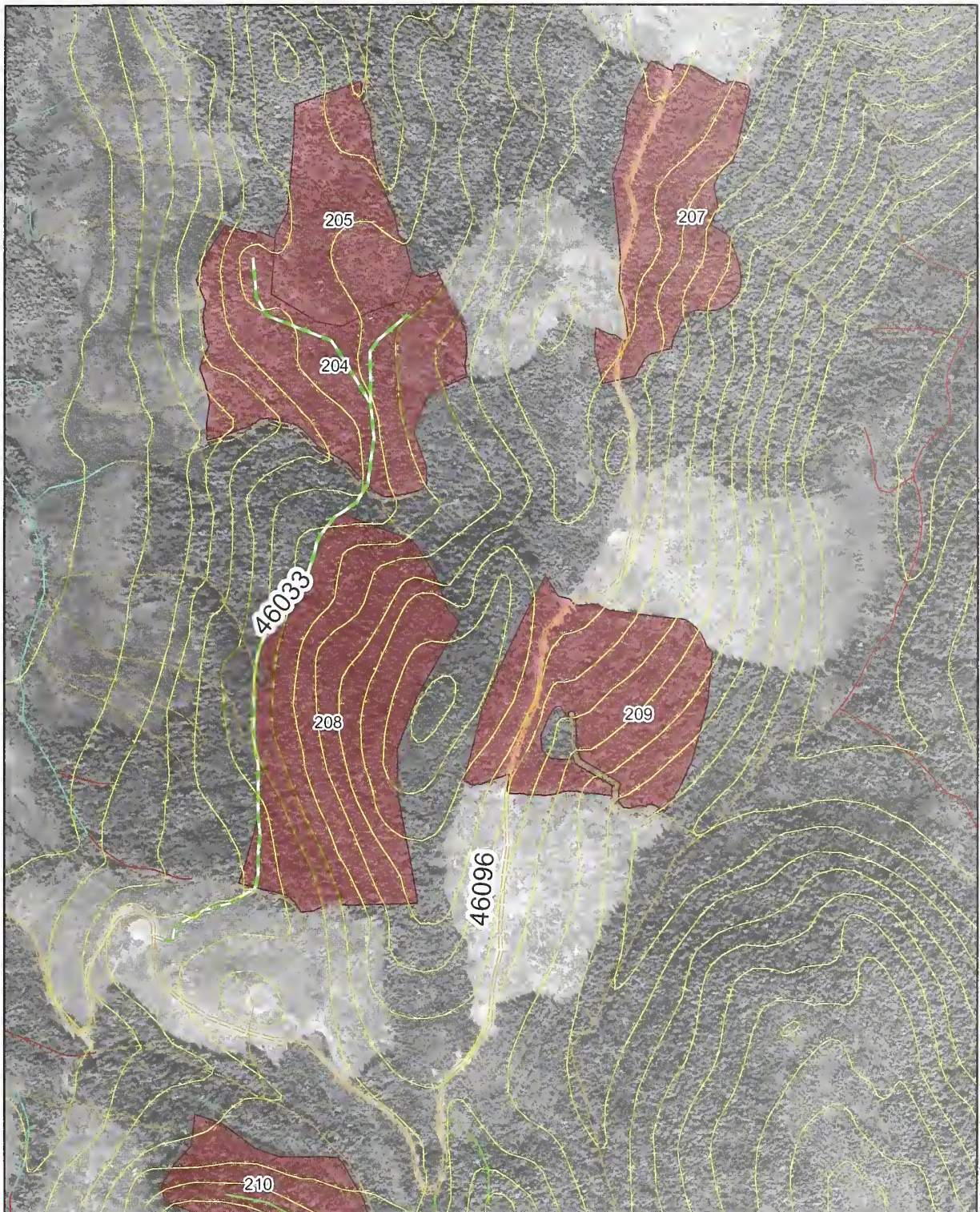
**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.





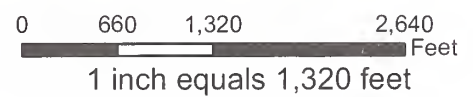




## Legend

- Units
- Contours 100 ft.
- Stream Class I
- Stream Class II
- Stream Class III
- Suitable for Passenger Vehicles (ML3)
- High Clearance Vehicles (ML2)
- - - Basic Custodial Care (Closed) (ML1)
- New NFS Designated Construction (ML2)
- Reconditioned
- New Temporary Construction

## Alternative 3 & 5 Road 46033





## Road Management Objective

<b>Project</b>			<b>System</b>	<b>Land Use Designation</b>
Kuiu			Kuiu	OG TM
<b>Route No</b>	<b>Route Name</b>	<b>Begin Terminus</b>		<b>End Terminus</b>
46034		6417 MP 1.35		
<b>Begin MP</b>	<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>
0.00	1.25	Planned		

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

#### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	1.25	2	1

#### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

#### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Site Specific Design Criteria

### ***Road 46034***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the existing Road 6417. The first 2,400 feet follows the existing roadbed of a decommissioned temporary road. At the end of the existing decommissioned roadbed the new road heads to the northeast and steadily gains elevation through a 15 year old clearcut. The road then enters timber sideslope and continues to gain elevation at an average of 10% to 15%. The majority of the road is located on sideslope averaging about 30 to 40%.

**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). Most of this road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

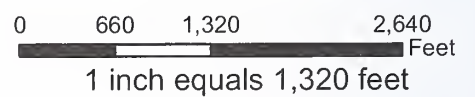
**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.





# Legend

- Alternative 4
- Contours 100 ft.
- Stream Class I
- Stream Class II
- Stream Class III
- Suitable for Passenger Vehicles (ML3)
- High Clearance Vehicles (ML2)
- Basic Custodial Care (Closed) (ML1)
- New NFS Designated Construction (ML)
- Reconditioned
- New Temporary Construction



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## Road Management Objective

<b>Project</b> Kuiu		<b>System</b> Kuiu		<b>Land Use Designation</b> OG TM	
<b>Route No</b> 46035	<b>Route Name</b>		<b>Begin Terminus</b> 6415 MP 1.19		<b>End Terminus</b>
<b>Begin MP</b> 0.00	<b>Length</b> 1.25	<b>Status</b> Planned	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>

### General Design Criteria and Elements

<b>Functional Class</b> Local	<b>Service Life</b> LI	<b>Surface</b> Shot rock	<b>Width</b> 14'	<b>Design Speed</b> 10	<b>Critical Vehicle</b> Log truck	<b>Design Vehicle</b> Log truck
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### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
0.00	0.31	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b> Hikers, bicycles <b>Accept:</b> High clearance vehicles <b>Discourage:</b> N/A <b>Prohibit:</b> N/A <b>Eliminate:</b> Motorized vehicles on closed section		

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_  
District Ranger

\_\_\_\_\_  
Date

## Site Specific Design Criteria

### ***Road 46035***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the existing Road 6415. The first 600 feet is through a 15 year old clearcut. At the end of the clearcut the new road heads to the northwest along timbered sideslope and steadily gains elevation at an average of 10% to 15%. The majority of the road is located on sideslope averaging about 30 to 40%.

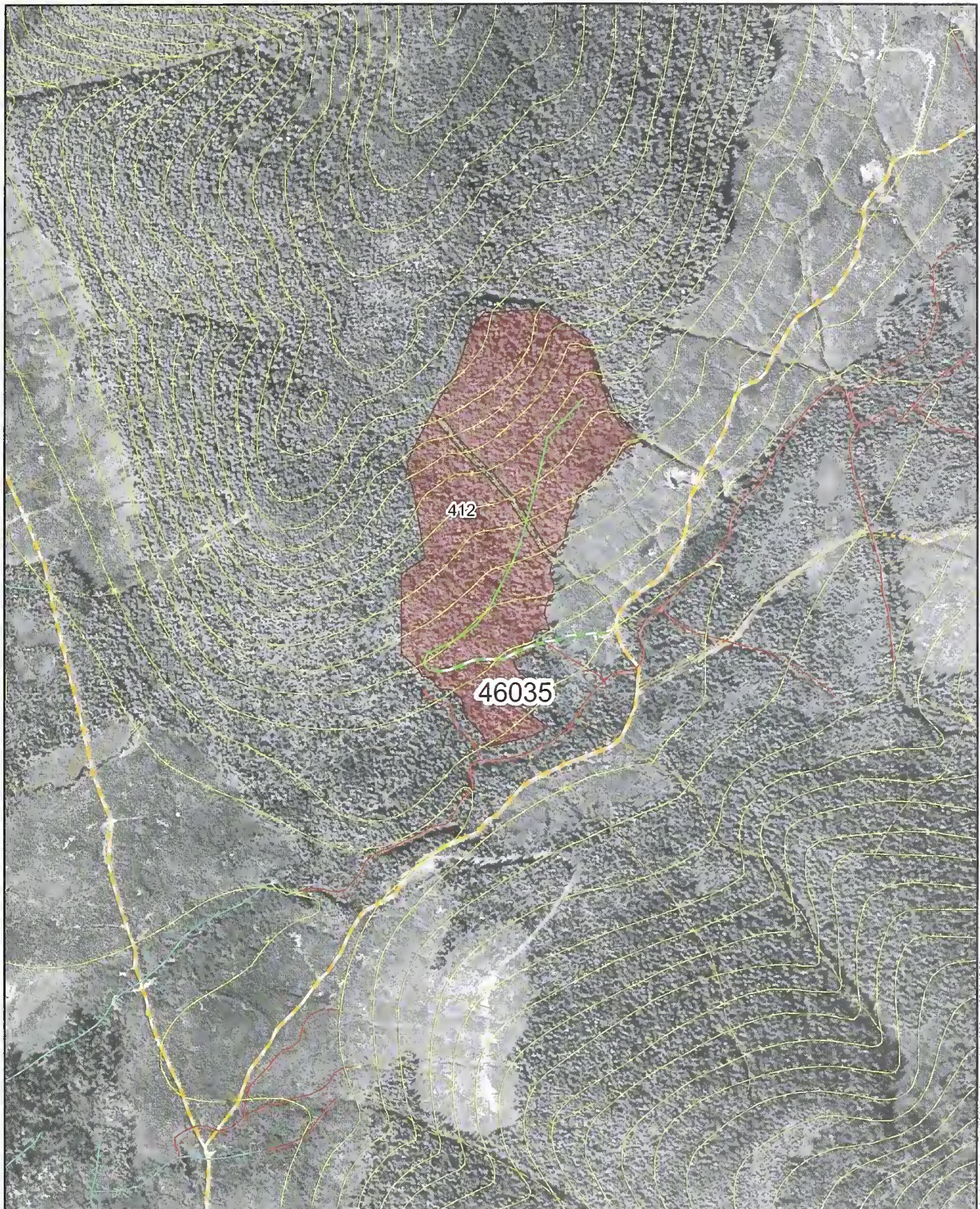
**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). This road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.





# Legend

- Units
- Contours 100 ft.
- Stream Class I
- Stream Class II
- Stream Class III
- Suitable for Passenger Vehicles (ML3)
- High Clearance Vehicles (ML2)
- Basic Custodial Care (Closed) (ML1)
- New NFS Designated Construction (ML2)
- Reconditioned
- New Temporary Construction

0 660 1,320 2,640 Feet

1 inch equals 1,320 feet

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## Road Management Objective

<b>Project</b>			<b>System</b>		<b>Land Use Designation</b>	
Kuiu			Kuiu		OG TM	
<b>Route No</b>		<b>Route Name</b>		<b>Begin Terminus</b>		<b>End Terminus</b>
46021				46021 MP 1.38		
<b>Begin MP</b>		<b>Length</b>	<b>Status</b>	<b>Map Quarter Quad</b>		<b>Photo year, roll, photos</b>
1.38		0.60	Planned			

### General Design Criteria and Elements

<b>Functional Class</b>	<b>Service Life</b>	<b>Surface</b>	<b>Width</b>	<b>Design Speed</b>	<b>Critical Vehicle</b>	<b>Design Vehicle</b>
Local	LI	Shot rock	14'	10	Log truck	Log truck

### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Current Condition)	Objective Maintenance Level (Desired Future Condition)
1.38	1.98	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 10 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_ District Ranger \_\_\_\_\_ Date \_\_\_\_\_



## Site Specific Design Criteria

### ***Road 46021***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the end of existing Road 46021. The first 400 feet is through a 15 year old clearcut. At the end of the clearcut the new road heads to the south along timbered sideslope steadily gains elevation at an average of 10% to 15%. The majority of the road is located on sideslope averaging about 30 to 40%.

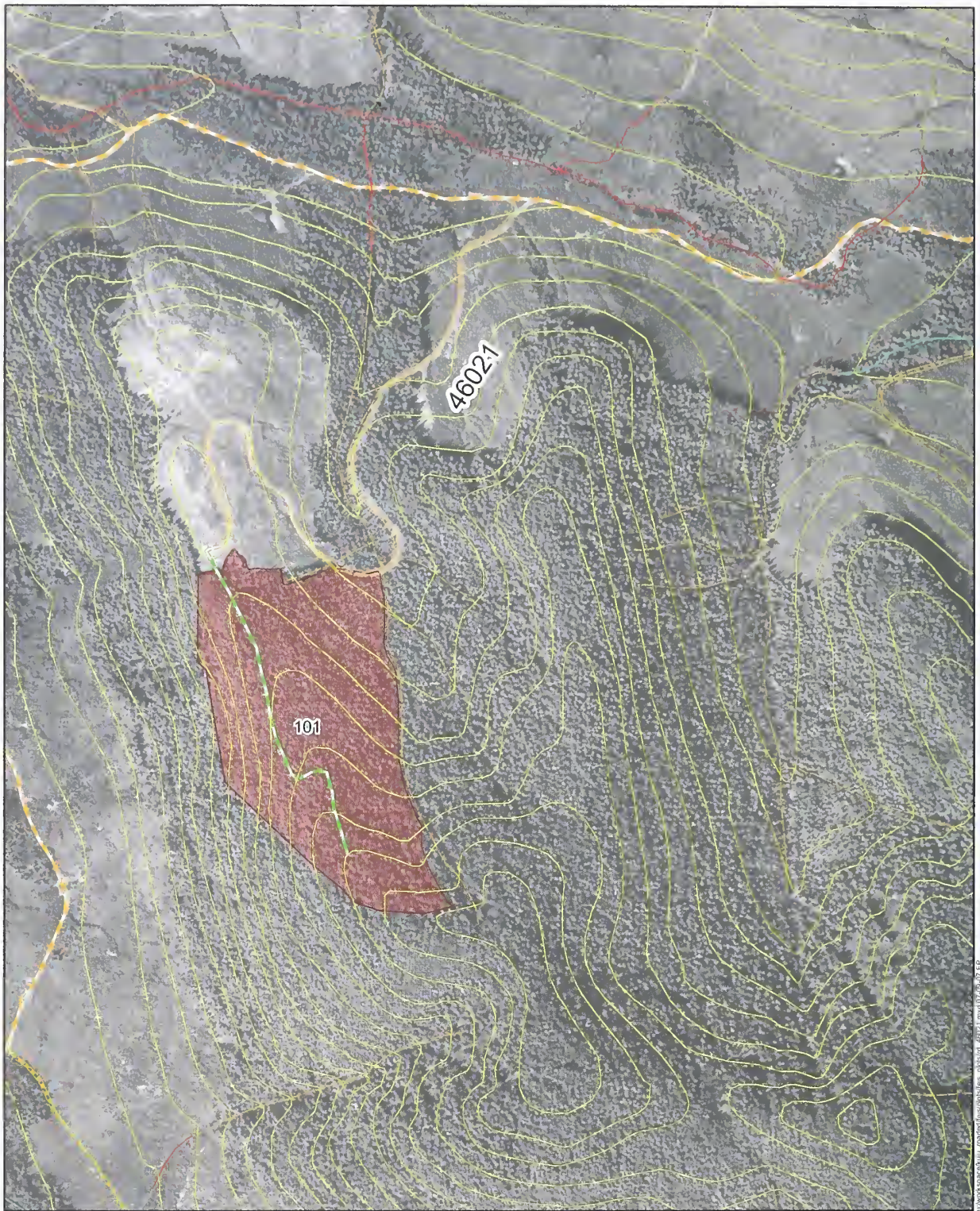
**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). This road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.





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### Legend

- |   |   |
|---|---|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: red; border: 1px solid black;"></span> Units     | <span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange;"></span> Basic Custodial Care (Closed) (ML1) |
| <span style="display: inline-block; width: 20px; border-bottom: 2px solid yellow;"></span> Contours 100 ft.                       | <span style="display: inline-block; width: 20px; border-bottom: 2px solid green;"></span> New NFS Designated Construction (ML2) |
| <span style="display: inline-block; width: 20px; border-bottom: 2px solid blue;"></span> Stream Class I                           | <span style="display: inline-block; width: 20px; border-bottom: 2px dashed grey;"></span> Reconditioned                         |
| <span style="display: inline-block; width: 20px; border-bottom: 2px solid red;"></span> Stream Class II                           | <span style="display: inline-block; width: 20px; border-bottom: 2px solid black;"></span> New Temporary Construction            |
| <span style="display: inline-block; width: 20px; border-bottom: 2px dashed red;"></span> Stream Class III                         |   |
| <span style="display: inline-block; width: 20px; border-bottom: 2px dashed orange;"></span> Suitable for Passenger Vehicles (ML3) |   |
| <span style="display: inline-block; width: 20px; border-bottom: 2px dashed grey;"></span> High Clearance Vehicles (ML2)           |   |

Road 46021

0      660      1,320      2,640  
 Feet  
 1 inch equals 1,320 feet



## Road Management Objective

<b>Project</b> Kuiu			<b>System</b> Kuiu	<b>Land Use Designation</b> OG TM
<b>Route No</b> 6427	<b>Route Name</b>		<b>Begin Terminus</b> 6427 MP 3.44	<b>End Terminus</b>
<b>Begin MP</b> 3.44	<b>Length</b> 0.22	<b>Status</b> Planned	<b>Map Quarter Quad</b>	<b>Photo year, roll, photos</b>

### General Design Criteria and Elements

<b>Functional Class</b> Local	<b>Service Life</b> LI	<b>Surface</b> Shot rock	<b>Width</b> 14'	<b>Design Speed</b> 10	<b>Critical Vehicle</b> Log truck	<b>Design Vehicle</b> Log truck
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### Intended Purpose/Future Use

Local road used for silvicultural activities, will be opened periodically, closed during times of inactivity.

### Maintenance Criteria

Bmp	Emp	Operational Maintenance Level (Planned Initial Condition)	Objective Maintenance Level (Desired Future Condition)
3.44	3.66	2	1

### Maintenance Narrative

Road will be maintained to facilitate travel by pickup truck at 15 mph. All culverts, ditches and drainage structures will be serviced, and road brushed.

### Operation Criteria

<b>Highway Safety Act:</b>	No	<b>Jurisdiction:</b>	National Forest ownership
<b>Traffic Management Strategies</b>	<b>Encourage:</b>	Hikers, bicycles	
	<b>Accept:</b>	High clearance vehicles	
	<b>Discourage:</b>	N/A	
	<b>Prohibit:</b>	N/A	
	<b>Eliminate:</b>	Motorized vehicles on closed section	

### Travel Management Narrative

Maintain as maintenance level 2 during project activities. Close road after timber harvest (maintenance level 1). Road closure may include any combination of tanktraps at the beginning of the road, pulling some or all drainage structures such as culverts, and/or gating. This road will be further evaluated for the most effective and efficient closure method prior to implementation. Additional stream structures and road cross drain structures may be removed if necessary to address resource concerns.

Approved \_\_\_\_\_ Date \_\_\_\_\_  
District Ranger

## Site Specific Design Criteria

### ***Road 6427***

**ROAD LOCATION:** The road steadily gains elevation between the beginning point at the end of existing Road 6427. The first 700 feet is through a 15 year old clearcut. At the end of the clearcut the new road heads to the southwest along timbered sideslope and steadily gains elevation at an average of 10% to 15%. The majority of the road is located on sideslope averaging about 30 to 40%.

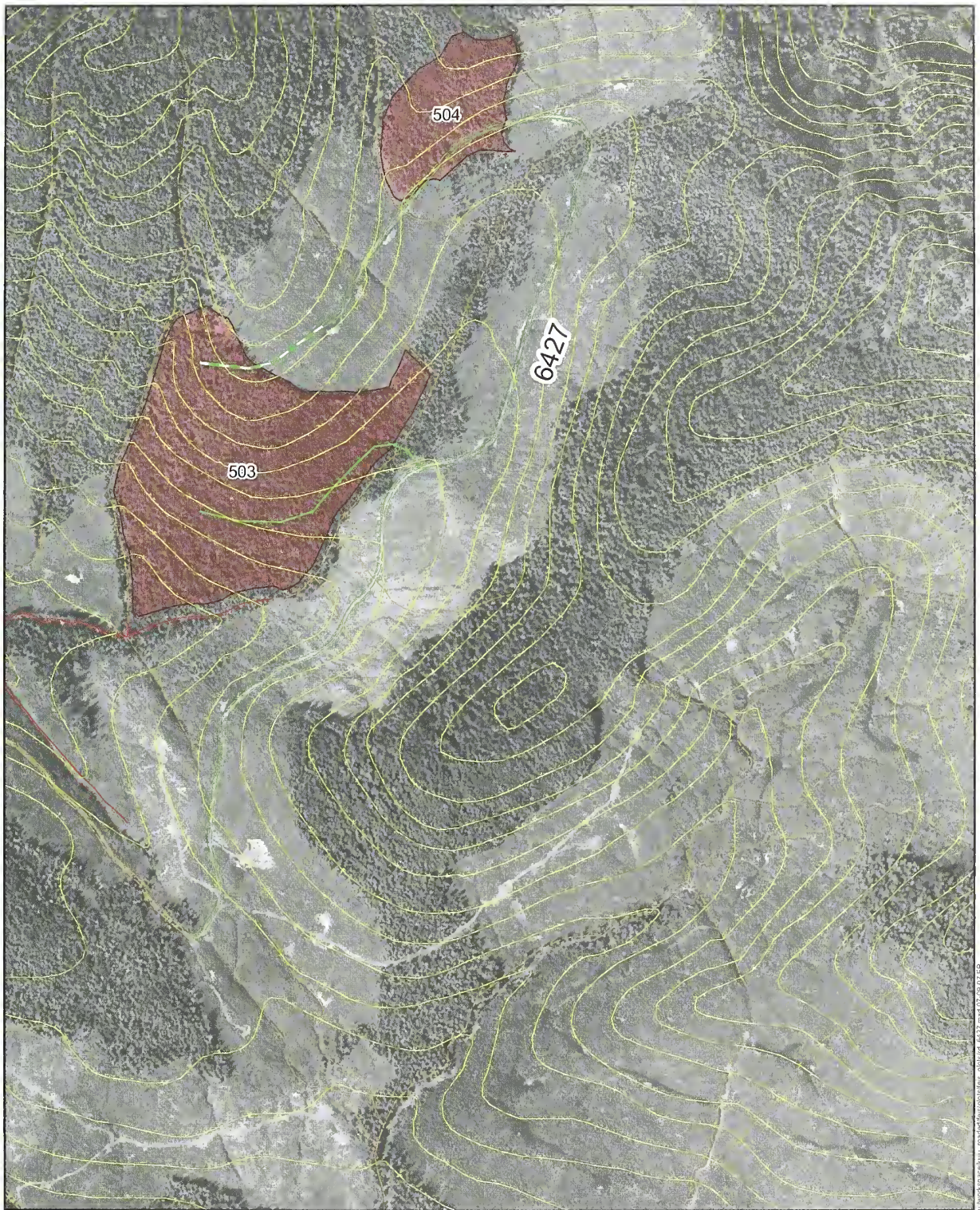
**WETLANDS:** The road location crosses no mapped wetlands (BMP 12.5). This road segment would be constructed as timber access road.

**EROSION CONTROL:** An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8)

**ROCK PITS:** During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

**STREAM CROSSINGS:** There are no stream crossings that require site-specific design consideration for volume of flow, fish habitat, or other design complexity.



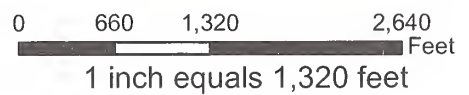


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# Legend

- |  |  |
|--|--|
| <span style="display:inline-block; width:15px; height:15px; background-color:red; border:1px solid black;"></span> Units       | <span style="display:inline-block; width:20px; border-bottom:2px dashed yellow;"></span> Basic Custodial Care (Closed) (ML1) |
| <span style="display:inline-block; width:20px; border-bottom:2px solid yellow;"></span> Contours 100 ft.                       | <span style="display:inline-block; width:20px; border-bottom:2px solid green;"></span> New NFS Designated Construction (ML2) |
| <span style="display:inline-block; width:20px; border-bottom:2px solid brown;"></span> Stream Class I                          | <span style="display:inline-block; width:20px; border-bottom:2px dashed green;"></span> Reconditioned                        |
| <span style="display:inline-block; width:20px; border-bottom:2px solid darkred;"></span> Stream Class II                       | <span style="display:inline-block; width:20px; border-bottom:2px solid darkgreen;"></span> New Temporary Construction        |
| <span style="display:inline-block; width:20px; border-bottom:2px dashed brown;"></span> Stream Class III                       |  |
| <span style="display:inline-block; width:20px; border-bottom:2px dashed orange;"></span> Suitable for Passenger Vehicles (ML3) |  |
| <span style="display:inline-block; width:20px; border-bottom:2px dashed grey;"></span> High Clearance Vehicles (ML2)           |  |

Road 6427





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# **Appendix C**

Agency Responses  
to Public Comments on the  
Kuiu Timber Sale Area Draft  
Environmental  
Impact Statement





## Introduction to Appendix C

After the Kuiu Timber Sale Area Draft Environmental Impact Statement (DEIS) was made available to the public, a Notice of Availability was published in the Federal Register on February 2, 2006. Publication of the Notice started a 45-day public comment period, which ended on March 20, 2006. Public notices announcing availability of the DEIS were also published in the Juneau Empire, the Newspaper of Record, and the Petersburg Pilot, the local Petersburg newspaper.

The Forest Service received approximately 76,200 emails, the majority of which were form letters generated from the Natural Resources Defense Council and the Wilderness Society websites. Approximately 100 other letters and emails were received, the majority expressing disapproval with the project, but they contained no substantive remarks. Approximately 100 other letters and emails were received, the majority expressing disapproval with the project, but they contained no substantive remarks. These comments were noted as well as the preference for Alternative 1, the No Action alternative. The original comments are in the project planning record.

Additionally, there were 11 email comment letters that addressed general issues such as timber economics, opposition of new roads, the cost of roadbuilding, the exportation of timber, and the subsidizing of timber companies. None of these letters were specific to the Kuiu Timber Sale. These comments were considered and many were responded to within responses to other comments more specific to the Kuiu project. These comments are in the project planning record.

The Forest Service received 18 substantive comment letters in response to the Kuiu Timber Sale Area DEIS from agencies, organizations, and individuals (Table D-1). Five comment letters were received from state and federal agencies, five from organizations and eight from individuals. The Interdisciplinary Team responded to the comments.

## Summary of Comments

The comments received covered several topics and ranged from general issues to quite detailed concerns about the analysis.

A majority of the letters included comments regarding water quality and fish habitat. There was concern that logging would increase sedimentation to watershed areas and create adverse effects to salmon and other types of fish species.

Many concerns were also voiced about the Forest Plan. The comments were that TLMP had been invalidated in *NRDC v. U.S. Forest Service* and that the Forest Service should not be pursuing timber projects until a new Forest Plan for the Tongass is completed. Timber economics in general, and in relation to the Forest Plan, was also brought up in several comments.

Some comments expressed concern about deer. These included: the use of the deer model, important deer winter range, and affects on subsistence for the residents of Kake. There were some concerns raised about soil stability and the risk of landslides. It was suggested that unit boundaries be redrawn to exclude areas with extreme hazard MMI – 4 soils.

# Introduction

One organization expressed a preference for Alternative 4, two agencies preferred Alternative 2, and the remaining comment letters advocated Alternative 1, the No-Action Alternative.

SHPO concurred with the Kuiu Timber Sale Draft EIS, as did the State of Alaska. The EPA rated the Draft EIS as EC-1 (environmental concerns, adequate information provided).

Table C- 1. Letters received from Agencies, Organizations, and Individuals

No.	Commenter	Public Numbers	
		Public Comment	Agency Response
1	Alaska Coastal Management Program	C3-6	C7
2	Environmental Protection Agency	C8-11	C12
3	National Marine Fisheries Service	C13-16	C17-19
4	Department of the Army	C20	C21
5	Organized Village of Kake	C22-24	C25-27
6	Consolidated comments from: Greenpeace, Sitka Conservation Society, Juneau Group of the Sierra Club, The Wilderness Society, and the Natural Resources Defense Council	C28-70	C71-98
7	Southeast Alaska Conservation Council	C99-106	C107-111
8	The Committee on Conservation of Forests and Wildlife	C112-114	C115-118
9	Chico Area Fly Fishers	C119-122	C123-125
10	Sealaska Corporation	C126-127	C128
11	Dave Beebe	C129-133	C134-140
12	Edna Jackson	C141-143	C144-145
13	Katie Fearer	C146	C147-148
14	Glen Ith	C149-151	C152-153
15	John Kober	C154	C155-156
16	Mike Jackson	C157-159	C160-162
17	Steve Mashuda	C163-165	C166-168
18	Chris Zimmer, Juneau, Alaska	C169-170	C171-172
19	NRDC form letter	C173	C174
20	WS form letter	C175	C176

# STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES  
OFFICE OF PROJECT MANAGEMENT/PERMITTING  
ALASKA COASTAL MANAGEMENT PROGRAM

□ SOUTHCENTRAL REGIONAL OFFICE  
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302 GOLD STREET, SUITE 202  
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□ PIPELINE COORDINATOR'S OFFICE  
411 WEST 4<sup>th</sup> AVENUE, SUITE 2C  
ANCHORAGE, ALASKA 99501  
PH: (907) 257-1351 FAX: (907) 272-3829

April 26, 2006

Ms. Patricia Grantham  
US Forest Service – Petersburg Ranger District  
PO Box 1328  
Petersburg, Alaska 99929

Dear Ms. Grantham:

**Subject: Kuiu Timber Sale Area Draft EIS  
State I.D. No. AK 0602-04J  
Final Consistency Response – Concurrence**

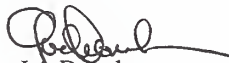
The Office of Project Management and Permitting (OPMP) has completed coordinating the State's review of the "*Kuiu Timber Sale Area Draft Environmental Impact Statement*" distributed by the USDA Forest Service for consistency with the Alaska Coastal Management Program (ACMP). The proposed project area is located on Kuiu Island near Kake, Alaska.

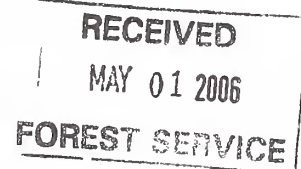
ACMP -1

Based upon review by the Alaska Departments of Environmental Conservation and Natural Resources, OPMP has developed the enclosed final consistency response, in which the State concurs with the determination that was submitted by the U.S. Forest Service, that the project is consistent with the ACMP and affected coastal district's enforceable policies, to the maximum extent practicable. This will be the final ACMP decision for this project as proposed.

By copy of this letter, I am informing the U.S. Army Corps of Engineers and State review participants of OPMP's finding. If you have any questions, please contact me at 907-465-4664 or email [joe\\_donohue@dnr.state.ak.us](mailto:joe_donohue@dnr.state.ak.us).

Sincerely,

  
Joe Donohue  
ACMP Project Specialist



Enclosure

*"Develop, Enhance, and Conserve Natural Resources for Present and Future Alaskans."*

# Comment Letter #1 - ACMP

cc: Kevin Hanley - ADEC, Juneau \*  
Mark Fink – ADFG, Anchorage \*  
Doug Sanvik - ADNR/ DMLW, Juneau \*  
Jim Anderson - ADNR/DMLW, Juneau \*  
Mike Curran - ADNR/DOF, Ketchikan \*  
Roy Josephson - ADNR/DOF, Haines\*  
Jim Cariello - ADNR/OHMP, Petersburg \*  
Jennifer Becker - ADNR/OPMP, Juneau \*  
Margie Goatley - ADNR/SHPO, Anchorage \*  
Andy Hughes - ADOT/PF, Juneau \*  
Paul Reese - Coastal District, Kake \*  
Victor Ross - USACE, Regulatory, Elmendorf AFB/Anchorage \*  
Cindy Hartmann – NMFS, Juneau \*  
Tom Waldo - Earth Justice, Juneau \*  
Buck Lindekugel - SEACC, Juneau \*  
Larry Edwards - Greenpeace, Sitka \*  
Michele Metz - Sealaska Corporation, Juneau \*

\* = emailed



# Comment Letter #1 - ACMP

- Access management measures including storage of classified roads,
- Any necessary project-specific mitigation measures and monitoring requirements,
- A determination whether there may be a significant restriction on subsistence uses, and
- Whether any changes in the small old-growth habitat reserves in Value Comparison Units (VCUs) 398, 399, or 402 should be made, and approved as a non-significant amendment to the Forest Plan."

## **SCOPE OF PROJECT TO BE REVIEWED:**

The scope of these concurrent NEPA scoping and preliminary ACMP consistency comment reviews included all information, possible alternatives and their descriptions, and procedural decisions that are discussed within the "*Kuiu Timber Sale Area Draft Environmental Impact Statement*"

## **CONSISTENCY STATEMENT:**

Based on an evaluation of your project by the Alaska Department of Natural Resources' – Division of Mining, Land and Water (DMLW), and Office of Habitat Management and Permitting (OHMP), and the Alaska Department of Environmental Conservation (ADEC), the State of Alaska concurs with the consistency determination submitted by the U.S. Forest Service – Petersburg Ranger District.

## **ADVISORIES:**

### **Department of Natural Resources:**

**Office of Habitat Management and Permitting (OHMP)** – On March 23, 2006 OPMP had issued a proposed ACMP consistency response to the U.S. Forest Service as an objection to the consistency determination submitted by the Federal agency for the proposed "Kuiu Timber Sale Area" project. The State's objection was based upon a lack of sufficient detailed project information that prevented the Department of Natural Resources' Office of Habitat Management and Permitting (OHMP) from completing project consistency comments for the ACMP consistency review.

On April 26, 2006 OPMP received an electronic message that the USFS had provided the Petersburg OHMP office with the information required to complete an assessment of the consistency of the proposed "Kuiu Timber Sale Area" project with the ACMP standards and policies. Based upon this additional information, OHMP recommends the proposed project be found consistent with the ACMP to the extent practicable with the following advisory: "While Alternative 4 (preferred) makes minimal allowances for wildlife, we strongly recommend the selection of alternative 2 [for the Record of Decision], which better addresses concerns for important deer habitat."

ACMP - 2

**Department of Environmental Conservation (ADEC)** – On March 14, 2006 OPMP received the following preliminary ACMP consistency comments:

# Comment Letter #1 - ACMP

"Pursuant to 11 AAC 110.015 of the Alaska Coastal Management Program and 11 AAC 95 (the Forest Practices Regulations), the department concurs with the Forest Service's consistency determination for this project. Our concurrence applies only to the water quality and fisheries aspects of this sale. We are able to agree with this determination based, in large part, on the level of information that was provided concerning the proposed road maintenance and closure methods. In addition, the full implementation of the TLMP process group standards and guidelines (RIP2.III.E) along all Class I, II, and III streams within the project area provides reasonable assurance that yarding will be carried out consistent with the standards of 11 AAC 95.360(a). As indicated above, we strongly recommend that the Forest Service select Alternative 2 for the Record of Decision for this project, as it best ensures the maintenance of water quality and fish habitat, and it has the least potential for further detrimental cumulative watershed effects."

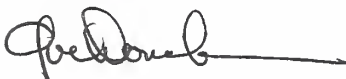
This consistency response may include reference to specific laws and regulations, but this in no way precludes an applicant's responsibility to comply with all other applicable State and federal laws and regulations.

This consistency response is only for the project as described. If, after issuance of a final consistency response, the applicant proposes any changes to the approved project, including its intended use, prior to or during its siting, construction, or operation, the applicant must contact this office immediately to determine if further review and approval of the modifications to the project is necessary. Changes may require amendments to the State authorizations listed in this response, or may require additional authorizations.

If the proposed activities reveal cultural or paleontological resources, the applicant is to stop any work that would disturb such resources and immediately contact the State Historic Preservation Office (907-269-8720) and the U.S. Army Corps of Engineers (907-753-2712) so that consultation per section 106 of the National Historic Preservation Act may proceed.

## **FINAL CONSISTENCY RESPONSE PREPARED BY:**

Joe Donohue – ACMP Project Specialist  
Department of Natural Resources  
Alaska Coastal Management Program  
302 Gold Street, Ste. 202  
PO Box 111030  
Juneau, Alaska 99811-1030  
(907) 465-4664



Joe Donohue

### **ACMP - 1**

The Forest Service notes the concurrence that the project is consistent with the ACMP and affected coastal district's enforceable policies, to the maximum extent practicable.

### **ACMP - 2**

The State's preference for Alternative 2 has been noted.

### **ACMP - 3**

The Forest Service will comply with all applicable State and federal regulations. The Forest Service will contact the Office of Project Management/Permitting if there is need for further review and approval. If cultural resources are discovered during project implementation, any work that may disturb those resources will stop and the Forest Service will proceed with Section 106 consultation.

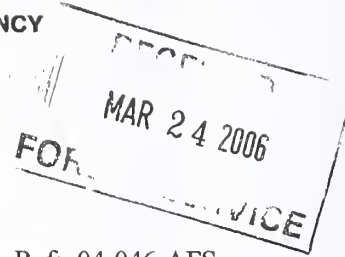
# Comment Letter #2 - EPA



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 10

1200 Sixth Avenue  
Seattle, WA 98101

March 20, 2006



Reply To  
Attn Of: ETPA-088

Ref: 04-046-AFS

Patricia Grantham, Project Manager  
Attn: Kuiu Timber Sale  
USDA Forest Service  
P.O. Box 1328  
Petersburg, AK 99833

Dear Ms. Grantham:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (EIS) for the **Kuiu Timber Sale Area** (CEQ No. 20060032), Tongass National Forest, in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309, independent of NEPA, specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Under our policies and procedures, we evaluate the document's adequacy in meeting NEPA requirements.

The draft EIS proposes a no action and three action alternatives that include timber harvest, road construction and road closure activities. Alternative 2 proposes timber harvest on 491 acres of forestland, construction of 2.9 miles of temporary road, reconstruction of 4.5 miles of road, and closure of 8.2 miles of open road after completion of the project. Alternative 3 would include timber harvest on 794 acres of forestland, construction of 7.5 miles of temporary road, reconstruction of 3.2 miles of road, and closure of 8.4 miles of open road after completion of the project. Alternative 4 (Proposed Alternative) would consist of timber harvest on 1,425 acres of forestland, construction of 19 miles of temporary road, reconstruction of 6.1 miles of road, and closure of 11 miles of open road after completion of the project. Alternative 5 would include timber harvest on 1,231 acres of forestland using only clearcut harvesting methods, construction of 17.1 miles of temporary road, reconstruction of 6.9 miles of road, and closure of 11 miles of open road after completion of the project.

EPA - 1 { EPA has rated the draft EIS as Environmental Concerns – Adequate Information (EC-1), consistent with EPA's rating system (enclosed). EPA's primary concern is the potential for adverse water quality impacts. EPA supports the selection of Alternative 2 as the environmentally preferred alternative that would meet the purpose and need of the project. Alternative 2 would reduce impacts to wildlife, hydrology and fisheries as well as minimize adverse impacts to wetlands.



## Comment Letter #2 - EPA

2

We appreciate the opportunity to comment on the draft EIS for the Kuiu Timber Sale. If you would like to discuss issues related to our review, please contact Denise Clark at (206) 553-8414 or myself at (206) 553-1601.

Sincerely,

A handwritten signature in black ink, reading "Christine B. Reichgott". The signature is written in a cursive style with a large, stylized "C" and "R".

Christine B. Reichgott, Manager  
NEPA Review Unit

Enclosure

# Comment Letter #2 - EPA

## EPA COMMENTS ON THE DRAFT EIS FOR THE KUIIU TIMBER SALE AREA TONGASS NATIONAL FOREST, ALASKA

EPA's comments address those matters that relate directly or indirectly to the authorities of EPA, consistent with our review responsibilities under Section 309 of the Clean Air Act. Our review places particular emphasis on ensuring impacts to water quality, air quality and wetlands are minimized or mitigated. We also consider purpose and need and supporting information as they relate to the identification of reasonable and feasible alternatives and their associated environmental impacts.

### Water Quality

EPA - 2 { The draft EIS indicates that harvest would take place in an area of Kuiiu Island that has experienced impacts from past harvest levels. Past cumulative harvest (since 1975) in watersheds that would be affected by the project range from 8% to 31% of the project area (Table 3-42). EPA appreciates the commitment to close roads to reduce sediment loading to streams and contribute to long term improvement in watershed health. The cumulative impacts discussion indicates there will be an overall long-term improvement in the health of each watershed. We recommend that the final EIS discuss the short term impacts in more detail, especially the time frame for which short term impacts are expected to peak and then begin to diminish. Would short term sediment loading be expected to be lower than thresholds established by the Tongass Forest Plan? We recommend that harvest be avoided or minimized in watersheds that have a past cumulative harvest at or near 20% or greater to avoid potential water quality and aquatic habitat impacts until those watersheds have fully recovered.

### Sediment Loading to Streams

The introduction of fine sediment to streams is an important water quality concern. The draft EIS indicates that there is a high potential for changes in stream channel conditions if sediment loads increase. The major source of sediment transport to streams within the project area would be through road construction and reconstruction and the placement and removal of culverts. Another potential source would be the removal of trees from steep slopes. The short term increase in sediment load to streams would be assumed to offset by the closure of roads, which may have a long-term beneficial effect.

EPA - 3 { The potential short term impacts due to mass movement of soils would be significantly greater under Alternatives 4 and 5. In addition, the acres of detrimental soil disturbance from harvest and road construction is significantly less for Alternatives 2 and 3 versus Alternatives 4 and 5. Also Alternative 2 would need the least stream crossings (5 versus 19 for Alternatives 3, 4 and 5). Lastly Alternative 2 would have the lowest potential rate of landslides for the proposed acres of harvest based on Mass Movement Index (Table 3-76). We recommend that the final EIS discuss the timeframe of when mass movement would be likely to occur, i.e., when the mass movement hazard be the greatest risk. The draft EIS and public scoping comments indicate that the watersheds on Kuiiu Island support a variety of species of fish important for the economy as well as for subsistence use. EPA supports the selection of a timber harvest volume that meets the purpose and need with minimum impacts to the environment. Since the draft EIS states that there will likely be future timber harvest within the project area, we recommend selection of Alternative 2, since it would have the least environmental impacts and allow the streams to recover more fully prior to future harvests.

EPA - 4 {

# Comment Letter #2 - EPA

## U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action\*

### Environmental Impact of the Action

#### **LO – Lack of Objections**

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

#### **EC – Environmental Concerns**

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

#### **EO – Environmental Objections**

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

#### **EU – Environmentally Unsatisfactory**

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

### Adequacy of the Impact Statement

#### **Category 1 – Adequate**

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

#### **Category 2 – Insufficient Information**

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

#### **Category 3 – Inadequate**

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

# Response to EPA

## **EPA - 1**

The EPA's rating of EC-1 (Environmental Concerns-Adequate Information) and support for the selection of Alternative 2 is noted.

## **EPA - 2**

The recommendation to discuss short-term impacts to watersheds in more detail has been addressed by expanding Issue 4 in Chapter 3 of the FEIS. Short-term sediment loading is expected to be consistent with the Forest Plan, and is not expected to exceed water quality standards set by the State of Alaska. The recommendation to avoid or minimize harvest in watersheds that have past cumulative harvest levels near 20 percent or greater is noted. The DEIS (p. 3-124) notes that because of the age of the majority of the existing clearcuts the 30-year cumulative harvest levels within all the watersheds would be less than 12 percent by the year 2011, including the harvest from any of the proposed alternatives.

## **EPA - 3**

The DEIS (p. 3-195) states that within four to seven years after harvest, root strength tends to decrease and soil cohesion begins to lessen, however, the upper time limit is not well defined. This discussion has been expanded in the FEIS to respond to the recommendation that the FEIS discuss the timeframe when mass movement would likely occur.

## **EPA - 4**

The recommendation for the selection of Alternative 2 is noted.



## Comment Letter #3 - NMFS



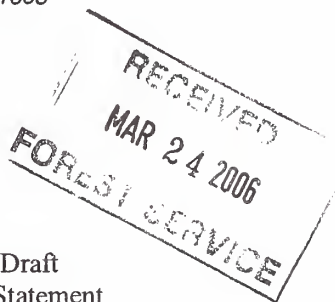
**UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration**

*National Marine Fisheries Service*

*P.O. Box 21668*

*Juneau, Alaska 99802-1668*

March 20, 2006



Patricia Grantham  
District Ranger  
Petersburg Ranger District  
P.O. Box 1328  
Petersburg, AK 99833

RE: Kuiu Timber Sale, Draft  
Environmental Impact Statement

Dear Ms. Grantham:

The National Marine Fisheries Service (NMFS) reviewed the Kuiu Timber Sale Area Draft Environmental Impact Statement (DEIS). The Kuiu Timber Sale Area is located on north Kuiu Island approximately 12 miles southwest of Kake and 35 miles northwest of Petersburg. The project area is within Value Comparison Units 399, 400, 402, and 421 and encompasses approximately 46,102 acres of National Forest System land. Four issues were identified through project scoping: roadless areas; wildlife habitat and subsistence; timber harvest economics; and cumulative watershed effects. Concerns were raised about the cumulative impact of introducing additional timber harvest and roads to watersheds that contain extensive harvested areas and high road densities. The DEIS stated "The cumulative effects of harvest and road building within Kuiu Timber Sale Area may affect the condition of stream channels draining these watersheds."

The action alternatives would harvest approximately 14.6 to 42.6 million board feet of timber; build 2.9 to 19 miles of temporary road; and reopen between 3.2 and 6.9 miles of existing closed classified roads. The preferred alternative, Alternative 4, would harvest approximately 42.6 million board feet of timber from approximately 1,425 acres, build 19 miles of new temporary roads and reconstruct 6.1 miles of closed classified road. As mitigation between 8.2 and 11 miles of currently open classified roads will be closed following harvest. In addition, structures on Road 6413 and excess fill in a stream crossing on Road 6417 will be removed (page 2.21).

Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) requires Federal agencies to consult with NMFS on all actions that may adversely affect EFH. NMFS is required to make conservation recommendations, which may include measures to avoid, minimize, mitigate or otherwise offset adverse effects. We offer the following comments specific to the MSFCMA for your consideration.

For the purposes of this project, EFH includes all segments of streams where salmon reside during any life stage or period of the year, and the marine waters and substrates of Rowan and Saginaw Bays. The streams in the project area provide important habitat for pink, chum, and coho salmon as well as steelhead and cutthroat trout and Dolly Varden char. The marine waters and substrates of Rowan and Saginaw Bays provide important habitat for a number of ground fish species including Pacific cod, arrowtooth flounder, Pacific Ocean perch, walleye pollock, dusky rockfish, shortraker and rougheye rockfish, yelloweye rockfish, sablefish, flathead sole, rex sole, sculpin and skate.



## Comment Letter #3 - NMFS

NMFS 1 [ NMFS concurs with the Forest Service determination that the Kuiu Timber Sale may adversely affect Essential Fish Habitat. Harvest is proposed in two watersheds that currently have over 20 percent of the watershed harvested within the past 30 years and one watershed with 19.8 percent of the watershed with recent harvest. This 20 percent harvest is considered a threshold of concern in third order watersheds which triggers a more intensive watershed analysis prior to additional disturbances. Since harvest began 8 to 59 percent of the project area watersheds have been harvested. Only watershed 109-44-10370 has less than a 19% harvest since harvest began. Of the seven watersheds in the project area three have a very high sediment risk index (SRI), two have a high SRI, and 2 have a moderate SRI. The unit cards identify fish habitat/watershed concerns in all units.

NMFS 2 The DEIS identified 6 grey culverts and 44 red culverts in the project area. A red crossing is one that cannot pass juvenile fish at some or all flows, a green fish crossing is one that can pass juvenile fish at all flows up to the Q2-2day flow (a two day delay from the mean annual flood), and a gray fish crossing needs additional analysis to determine if it is red or green. Of the 44 red culverts, 11 are on Class I streams (page 3-180). Those culverts that have had upstream habitat analysis block or partially block approximately 2.4 miles of Class I habitat and 5.2 miles of Class II stream habitat. The 44 culverts that do not meet current standards for fish passage should be described in further detail as well as the corresponding habitat that is impacted and not available or only partially available. The potential for correcting some or all of these culverts should be investigated. What opportunities are being foregone by not replacing or improving fish passage in these culverts in conjunction with this proposed timber sale and road maintenance and construction activities? What are the cumulative impacts on fish passage from previous road construction and proposed construction?

NMFS 3 Forest roads are only exempted from Clean Water Act jurisdiction if they are maintained to ensure waters are not impaired ((404) (f) (1) (E)). The DEIS identified that road maintenance needs are increasing as the road system and drainage structures age. Data provided in the DEIS and in the road condition survey indicates that the existing roads impair biological characteristics of the waters. Perhaps existing best management practices are not sufficient to ensure these roads will not impair waters. NMFS is concerned with construction of additional miles of road when the existing roads are potentially impairing the chemical and biological characteristics of waters. The project should incorporate measures to remediate for impaired waters from prior road construction. The mitigation proposed seems minimal relative to the number of red culverts in the project area.

NMFS 4 The unit cards identify several units with high hazard soils mass movement index, MMI-3 or extreme hazard soils MMI-4. These units are: 101, 207, 209, 303, 305, and 417. The portion of the unit with MMI-3 and MMI-4 soils has been removed in some instances but not all. In some instances logging is being allowed and full suspension is not required, while in other cases full suspension is required. Logging on soils with a high mass movement index increases the chance of a landslide which increases the potential for sediment delivery to streams. Minimizing the risk of sediment inputs to streams from landslides and roads provides a strategy for avoiding undesirable channel changes (page 3-114).

## Comment Letter #3 - NMFS

The narrative on page 3-181 and 3-186 gives the existing continuous bark coverage in Rowan Bay as 0.5 acres and in Saginaw Bay as 1.08 acres. The Alaska Department of Environmental Conservation (ADEC) data base has different amounts of bark debris from the 2002 dive report (personal communication with Chris Foley on March 20, 2006). For the Rowan Bay LTF ADEC lists 0.81 acres of continuous bark debris and 0.64 acres of discontinuous bark debris. For the Saginaw Bay LTF ADEC lists 0.74 acres of continuous bark debris, 0.1 acres of discontinuous bark debris, and 0.86 acres of zero to trace bark coverage. The cumulative impact of additional bark debris is not discussed relative to existing wood debris. The DEIS simply states "Sporadic use of either LTF is not expected to cause additional bark accumulation." However the amount of existing accumulation is close to the threshold (100% bark covering more than 1 acre and deeper than 10 cm at any single point) and which triggers a remediation plan. How much bark is expected to be added from this proposed sale? The EA does not discuss the October 1995 LTF Siting, Construction, Operation, Monitoring and Reporting Guidelines or whether the LTFs meet those guidelines. Both LTFs were constructed prior to these guidelines and were not required to comply with the siting guidelines. Would they comply with these guidelines as presently configured? If not, then barging the logs should be given more consideration. The DEIS does not provide a detailed analysis of the costs of a barge LTF facility versus an in-water LTF or the potential benefits to the biological resources of using a barge facility.

NMFS  
5a

NMFS  
5b

NMFS  
5c

NMFS  
5d

The EA could use additional clarity and information in the following areas:

- It would be most helpful to the reader to have the order of the watersheds the same in all the tables to facilitate comparisons.
- As mentioned above the amount of bark debris accumulation is different than that reported by ADEC.
- The narrative at the top of page 3-114 states "Except for roads and landings, timber harvest occurring more than 20 years ago was not accounted for because harvested slopes are expected to recover rooting strength in the soil and stabilize after a 20 year period." Elsewhere in the document you use a 30 year timeframe (see C-14).
- P 3-117 says 27% of the Saginaw Creek Watershed has been harvested, however Page C-27 says 29% has been harvested.
- It would be useful to have the all the watershed condition information summarized in a table including the percent of the watershed harvested since harvest began; the acres in riparian harvest and percent of the watershed with riparian harvest; number and size of landslides; and the sediment risk index (SRI).
- Include the inherent SRI in Table 3-49.
- Identify the number of red and gray culverts in each watershed and by road number.
- Include data on the existing stream conditions for Rowan Creek watershed and 109-44-1-370 watershed.

NMFS  
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NMFS offers the following EFH Conservation Recommendations pursuant to Section 305(b)(4)(A) of the MSFCMA.

1. Evaluate the potential for correcting the 44 red culverts that do not meet the current standards for fish passage. Include this information in the analysis, and evaluate foregone opportunities if fish passage is not corrected as a part of this project.

NMFS  
14



## Comment Letter #3 - NMFS

NMFS  
15

2. Change the unit boundaries for Units 101, 207, 303, 305 to eliminate the extreme hazard soils (MMI-4) from the Unit. For units where this may not be feasible require full suspension and single tree selection.

NMFS  
16

3. Change the unit boundary (NE corner of the unit) for Unit 417 to eliminate the high hazard soils (MMI-3) from the Unit.

4. Implement the management recommendations identified in the watershed analysis which includes: strict avoidance of potentially unstable slopes when planning road locations and timber harvest units, diligent maintenance of open roads, and placing roads in storage when not needed for specific planned activities.

NMFS  
17

5. Consider including some of the management opportunities identified in Table 1-3 (page 1-13) as mitigation for this project.

NMFS  
18

6. Evaluate the potential to use a barge in conjunction with both LTFs instead of putting the logs directly in the water.

If you have questions regarding our comments contact Cindy Hartmann at (907) 586-7585.

Sincerely,



Robert D. Mecum  
Acting Administrator, Alaska Region

cc: Kris Rutledge, USDA FS, Petersburg Ranger District  
comments-alaska-tongass-petersburg@fs.fed.us  
\*Chris Meade, EPA Juneau  
\*Tom Schumacher, ADF&G, Juneau  
\*Richard Enriquez, USFWS, Juneau  
\*Bill Hanson, USFWS, Juneau  
\*Kevin Hanley, ADEC, Juneau  
\*Jim Cariello, ADNR-OHMP, Petersburg  
\*Joe Donohue, ADNR-OPMP, Juneau  
\*Don Martin, USFS, Juneau  
\*Ron Dunlap, USFS, Juneau  
\*Dick Aho, USFS, Petersburg  
\*Cindy Hartmann, NMFS, Juneau

\*email



## **NMFS - 1**

That NMFS concurs with the Forest Service determination is noted.

## **NMFS - 2**

Culverts which reduce or restrict fish passage are being looked at and prioritized on a forest-wide level. The potential for correcting the red culverts in the planning area was examined and the opportunity to improve fish passage where road work is proposed for the timber sale project was incorporated. Two red fish passages problems will be corrected with the implementation of any of the action alternatives, creating a reduction in the cumulative impacts to fish passage.

## **NMFS - 3**

Best Management Practices (BMPs) are sufficient to protect water quality. The existing roads were constructed before BMPs were in place. All proposed roads and approximately 8 to 11 miles of currently open NFS roads would be closed after timber harvest is complete. An interagency group is currently working on a model that would help make management recommendations for the red culverts. The model was tested in 2006 and the preliminary findings are available. The model requires refinement and additional data needs to be collected before it can be used for all culverts on the forest.

## **NMFS - 4**

A soil stability analysis was completed by a Soils Scientist for all MMI-4 soils within planned road locations and timber harvest units. All unstable slopes were avoided. However, due to numerous concerns, those units with MMI-3 and MMI-4 soils were reanalyzed. Units 207, 303, and 305 (see unit cards in FEIS Appendix B) will be modified to exclude the MMI-4 soils. For Unit 101, the MMI-4 soils in the southeast corner of the unit will be removed and the area along the western edge of the unit will remain. There are no streams in this area and the risk of sedimentation delivery to a stream is very small. The majority of the slope within unit 417 was between 45-65% and very little slope gradient over 70%. Where 70% slope gradients did exist, the area was well benched, well drained, and had no evidence of slumping or sliding. Although the GIS database has identified soils at the northeast corner as being MMI-3, this area is considered low risk for mass movement potential.

## **NMFS - 5a**

The numbers in the DEIS were the numbers in the dive report. When the dive report was sent to ADEC it was reanalyzed and decided that the amount of bark accumulation was over estimated. The number reported by ADEC will be used in the FEIS.

## **NMFS - 5b**

There are many variables that make estimation of additional bark accumulation impossible. If the logs are barged, then no significant amount of bark accumulation is expected as a result of this timber sale. If the logs are placed in the water, the amount of bark accumulation depends on: how much bark is on the trees when placed in the water, the wave action of the water, how long the logs are in the water, the time of year that the trees are harvested, and how the logs are placed in the water. The bark accumulation will

# Response to NMFS

be monitored and if the accumulation exceeds EPA standards then appropriate action will be taken.

## **NMFS - 5c**

Neither LTF meets all of the 1985 siting and construction guidelines. This, however, is not a requirement because they were constructed before 1985. The common practice in the timber industry is to barge logs; however, both the Saginaw and Rowan Bay LTFs are permitted under the EPA General Permit AK-G70-0027 to raft logs. It is important to retain the flexibility to raft logs if needed.

## **NMFS - 5d**

The cost of a barge LTF is not significantly different from an in-water LTF. Both the Saginaw and Rowan Bay LTFs can accommodate barges at this time; however, Saginaw LTF could use additional work to make barging easier and more convenient. The benefit to biological resources of a barge LTF is that very little bark accumulation will occur.

## **NMFS - 6**

The order of the watersheds in the tables was made consistent within the section to facilitate easier comparisons.

## **NMFS - 7**

Please see NMFS – 5a for response to this comment.

## **NMFS - 8**

The 20-year time frame referred to in the DEIS (p.3-114) describes the expected recovery time, with respect to landslide risk, for harvested slopes. This number comes directly from a paper that assessed slope recovery time (Brardinoni et al., 2002), and that paper is cited in the DEIS (p. 3-114). The 30-year time frame referred to elsewhere in the document comes from the Forest Plan, which states that a more complex watershed analysis should be conducted in watersheds having more than 20 percent of the watershed acres with trees in second-growth younger than 30 years. This direction is described in the DEIS (p.3-112).

## **NMFS - 9**

There is an error on page 3-117 of the DEIS. The correct cumulative harvest level for Saginaw Creek is 29 percent, as stated in Appendix C on page C-27. This error has been corrected in the FEIS.

## **NMFS - 10**

The information requested has been added to the Hydrology Resource report that is available in the planning record. It was not included in the FEIS to minimize document size.

## **NMFS - 11**

The inherent SRI was included in the FEIS table.

## **NMFS – 12**

The red and gray culvert locations are available by road number from the Road Condition Surveys located in the planning record. This information does not include watershed names.

## **NMFS - 13**

Detailed stream channel condition assessments were only conducted for watersheds with greater than 20% cumulative harvest. Because Rowan Creek and 109-44-10370 do not exceed this threshold, the information requested is not available.

## **NMFS - 14**

See NMFS - 2 for response

## **NMFS - 15**

See NMFS - 4.

## **NMFS - 16**

Units 207, 303, and 305 will be modified to exclude the MMI-4 soils. For unit 101, the MMI-4 soils in the southeast corner of the unit will be removed and the area along the western edge of the unit will remain. All roads opened for this project will be placed in storage after timber harvest is complete and additional miles of road will be placed in storage. Unstable slopes were avoided in road locations and timber harvest units.

## **NMFS - 17**

As part of this project, approximately 8 to 11 miles of open road will be placed in storage. Some of these activities are in the beginning stages of analysis and may be completed before the FEIS can be implemented and others are outside the purpose and need of this project.

## **NMFS - 18**

The common practice in the timber industry is to barge logs, however, the Rowan Bay and Saginaw Bay LTFs are permitted under the EPA General Permit AK-G70-1000 to raft logs. It is important to retain the flexibility to raft logs if needed.

# Comment Letter #4- Dept. of the Army



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, ALASKA  
P.O. BOX 6898  
ELMENDORF AFB, ALASKA 99506-0898

FEB 10 2006

Regulatory Branch  
POA-2006-279

Ms. Patricia Grantham  
Petersburg District Ranger  
U.S. Forest Service  
648 Mission Street  
Ketchikan, Alaska 99901

*PG Kris -*

Dear Ms. Grantham:

Thank you for the opportunity to comment on the Kuiu Timber Sale Area, Draft Environmental Impact Statement (DEIS). It has been assigned number POA-2006-279, Frederick Sound, which should be referred to in all future correspondence with this office.

DA - 1

Four of the five proposed alternatives in the DEIS, requires temporary road construction to include temporary placement of culverts and bridges (with the exception of Alternative 1, the No-Action Alternative). In addition, the four work alternatives include utilizing the Rowan Bay and/or the Saginaw Bay Log Transfer Facilities (LTFs). We concur with the determination that all temporary roads proposed for this project are exempt from Clean Water Act permitting, provided they are constructed according to best management practices that include the baseline provisions that are listed in 33 CFR 323.4(a)(6)(i-xv). If the roads are maintained open for public use, Department of the Army (DA) authorization would be required if there is a discharge of fill material into the waters of the U.S. Please keep in mind that all silviculture roads proposed for conversion to multi-use roads would need to be evaluated for permitting requirements. We also concur with the determination that reconstruction of Saginaw Bay LTF and/or modifications to Rowan Bay LTF may require DA authorization.

DA - 2

You may contact me at (907) 753-2712, toll free from within Alaska at (800) 478-2712, by email at [nicole.m.hayes@poa02.usace.army.mil](mailto:nicole.m.hayes@poa02.usace.army.mil), or by mail at the letterhead address, ATTN: CEPOA-CO-R-E, if you have questions. For additional information about our Regulatory Program, visit our web site at [www.poa.usace.army.mil/reg](http://www.poa.usace.army.mil/reg).

Sincerely,

Nicole Hayes  
Regulatory Specialist

RECEIVED

FEB 15 2006

FOREST SERVICE



## Response to Dept. of the Army

### **DA - 1**

The Forest Service acknowledges the concurrence that all temporary roads proposed for this project are exempt from Clean Water Act permitting, provided they are constructed according to BMPs (best management practices). No new NFS roads proposed for this project would be maintained for public use. New NFS roads would be closed and placed in storage at the end of timber harvest activities. New NFS roads would also utilize BMPs listed in 33 CFR 323.4.

### **DA - 2**

The Forest Service notes that reconstruction of Saginaw Bay LTF and/or modifications to Rowan Bay LTF may require DA authorization.

# Comment Letter #5 - Organized Village of Kake - OVK



## Organized Village of Kake

P.O. Box 316

Kake, Alaska 99830-0316

Telephone 907-785-6471

Fax 907-785-4902 / email KeexKwaan@starband.net

(Federally Recognized Tribal Government serving the Kake, Alaska area)



March 17, 2006

Kris Rutledge, Team Leader  
USDA Forest Service  
P.O. Box 1328  
Petersburg, Alaska 99833

RE: Kuiu Timber Sale

Dear Ms. Rutledge:

The Organized Village of Kake (OVK), a federally recognized Indian Tribe, is organized pursuant to the authority of the Federal Indian Reorganization Acts (hereinafter IRA) of 1934 & 1936 with the IRA Council as the duly elected governing body formed under its *Constitution and By-laws* to protect customary and traditional resources used by tribal membership on public and other lands.

From time immemorial, north Kuiu Island has been, and continues to be, an important customary and traditional use area for tribal members of OVK. In spite of your agency's responsibility to consult and collaborate with OVK and to implement projects in a way that does not disproportionately impact minority and low-income communities, such as Kake, the Forest Service continues to propose timber sales that completely fail to accommodate the concerns of OVK for its tribal membership.

Executive Order 13175, the U.S. Forest Service Manual, and the position of OVK, as shared by over 250 other American Indian Tribes represented by the National Congress of American Indians, all require that adequate consultation involve tribal input before agency action is taken. Although there were open houses in June and November, 2004, the range of alternatives proposed by the Forest Service falls far short of any effort to accommodate the real concerns of OVK with further destruction of our ancestral lands. There was no tribal consultation with OVK regarding the Kuiu Timber Sale.

Executive Order 13175 was issued on November 6, 2000, which revoked Executive order 13084, issued by President Clinton on May 14, 1998. The latter Executive Order was the first to order consultation and coordination with Indian Tribal Governments. Both of these orders were issued after the Forest Service approved the revised Tongass Forest Plan on May 23, 1997. Consequently, the Forest Service did not consult or coordinate with OVK during the planning process that resulted in the 1997 Revised TLMP.

In *NRDC v. USFS*, the 9<sup>th</sup> Circuit Court of Appeals found fundamental defects in the 1997 Tongass Forest Plan based on the substantial error made by the Forest Service in estimating the market demand for Tongass Timber. As the court explained, this error "fatally infected [the agency's] balance of the economic and environmental considerations..." *NRDC v. USFS*, 421 F.3d 797, 816 (9<sup>th</sup> Cir. 2005). As a result, the court directed the Forest Service to revise the Tongass Forest Plan. Until that court-mandated revision is complete, OVK urges the Forest Service to halt all planning activities related to the Kuiu Timber Sale project. Forty years of industrial scale logging on our ancestral land is enough.

We further remind the Forest Service that the Record of Decision (ROD) approving the 1997 Tongass Forest Plan directed "Forest Supervisors and District Rangers to increase their efforts in collaborative stewardship within the communities of Southeast Alaska. Collaborative stewardship means bringing people together to



# Comment Letter #5 - Organized Village of Kake - OVK

Comments to the Kuiu Timber Sale  
By Organized Village of Kake  
Page 2

OVK  
3 cont.

in the decision making in implementing Forest Plan direction.” Tongass Forest Plan ROD at 42. Furthermore, consistent with its duty to consult and collaborate with OVK, the Forest Service should have worked with OVK to limit any permissible logging on North Kuiu Island to methods and volumes that would not significantly harm customary and traditional uses of our ancestral lands. Its efforts fell far short of these requirements.

In a recent news story explaining why the Forest Service had withdrawn its approval of the 4 million board foot Overlook Timber Sale, Petersburg District Ranger Grantham is quoted as saying, “It’s very important to accurately describe our projects so that the public has a clear picture of what is being proposed.” (“U.S. Forest Service to Review Mitkof Sale,” Juneau Empire, Mar. 16, 2006, A2) While we wholeheartedly agree with Ranger Grantham, the Draft EIS for the Kuiu Timber Sale Area utterly fails to satisfy this basic objective. In particular, the analysis in the DEIS of the impact of past, existing, and future habitat conditions on the customary and traditional hunting of deer on north Kuiu Island is severely flawed and appears designed not to inform the public about the project but to rationalize the proposed action.

OVK  
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In 1998, OVK challenged the Crane and Rowan timber sale decision because the Forest Service relied on absolute deer habitat projections and faulty demand projects to support its findings that the project would not cause a significant restriction to customary and traditional uses of deer. To support our argument on the faulty demand projections, we submitted the testimony of six actual hunters from Kake, who hunted on Kuiu between 1960 and 1968. In its decision denying our appeal, the Forest Service promised “to work collaboratively with Kake residents in reviewing and possibly revising the data on hunter demand for Kuiu Island.” (from ARO recommendation to Regional Forester at 18, October 16, 1998). Nonetheless, the DEIS continues to use this contradicted and unreliable data. See DEIS at 3-82 (“ADF&G also estimated hunter demand for deer in WAA 5012 to be 68 deer, based on estimated annual harvest during the years 1960-1968.”).

Instead of relying on theoretical or unreliable data, the Forest Service should have based its conclusions on the readily available information. The 1998 Crane and Rowan Final EIS asserted that the ADF&G estimated “an average of approximately 200 deer were killed on Kuiu annually in the 1960’s.” See Crane and Rowan FEIS at 3-63. Even if it is assumed that these numbers accurately reflect the number of deer harvested by Kake hunters, the most recent data from 1993 to 2003 show that on average only 18 deer are harvested from Kuiu Island, as a whole, thus indicating a severe reduction in deer population due to past timber harvests. See DEIS, Table 3-28 at 3-82.

As more old growth habitat disappears to clearcuts on Kuiu, tribal members will have to expend even greater efforts to find and kill deer in the project area, regardless of the Forest Service’s estimate of how many deer the Kuiu project area can theoretically support. As a matter of common sense, the Forest Service must conclude that the need by OVK hunters to spend more time and greater effort to harvest deer on Kuiu Island constitutes a significant restriction to subsistence uses. Clearly, OVK hunters’ customary and traditional activities are significantly restricted when we have to travel farther from home to hunt deer at a time of year with dangerous and life-threatening weather conditions. Sadly, in recent years, three OVK hunters faced the ultimate restriction when they lost their lives attempting to make the 24 mile run across Frederick Sound to Admiralty Island for deer. One of these hunters was a young man not yet out of high school.

OVK  
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Another example of inaccuracy, and a clear indication of the shallowness of the consultation effort conducted by the Forest Service with OVK for this project, is the outdated community profile contained in the DEIS. In 2003, the reported population for Kake was 682 residents. See DEIS at 3-76. Yet the current population of Kake is Table 3-92, identifying Kake’s population at 663 in 2004. In the last two years, however, Kake’s population has dropped over 12 percent to 598. The description of Kake’s employment and income is also inaccurate and outdated. See DEIS at 3-253. The DEIS states that seafood processing at Kake Foods “contribute[s] considerably to the economy.” Unfortunately, the Kake Foods has not operated at all in the past two years; tribal members are forced to seek seasonal employment in Petersburg and Sitka, returning home when these seasonal jobs are over. The DEIS also references employment of residents logging on village and regional corporation

# Comment Letter #5 - Organized Village of Kake - OVK

Comments to the Kuiu Timber Sale  
By Organized Village of Kake  
Page 3

lands. For the record, Kake Tribal recently sold all its logging equipment, so like Kake Foods, these logging jobs are minimal at best. Logging by the regional corporation employs less than a dozen local men and these jobs are an extremely short season. Tribal members who were hired for these jobs had to eventually leave Kake to work in Kensington Mine because of the few hours they were even called to work.

Reliance by the Forest Service on this outdated and incomplete information makes its attempt to evaluate the human health and environmental effects of the proposed action, pursuant to Executive Order 12898 arbitrary. While the DEIS attempts to evaluate the social and economic effects of the proposed Kuiu timber sale on Kake, it completely fails to consider how past and future significant impacts to customary and traditional activities in the project are impacting the cultural and social lives of OVK members.

OVK  
5 cont.

The environmental justice analysis contained in the DEIS fails to disclose current unemployment statistics for Kake, compare the median incomes of Kake households with the regional medium, evaluate the access of residents to potential jobs. For the record, the Denali Commission has recently classified Kake as a "distressed" community due to the dire economic situation. An 'economically distressed community' as defined by the Denali Commission Code are:

1. Per capita market income no greater than 67% of the U.S. average; and
2. Poverty rate at 150% of the U.S. average or greater; and
3. Three-year unemployment rate at 150% of the U.S. average or greater; or
4. Twice U.S. poverty rate and either (1) or (3) above


For the record, many of our tribal members are not even included in the State's unemployment statistics because they are not even drawing unemployment.

During times of economic downfall, tribal membership depend even more so on gathering of customary and traditional foods and we see no reflection of this in your DEIS, nor the fact that our community is severely economically impacted.

In summary, the Organized Village of Kake is opposed to further logging on north Kuiu due to previous industrial scale logging impact that has had a cumulative effect on fish and wildlife habitat and watersheds, which directly impacts the customary and traditional gathering (subsistence) of our tribal membership. The Organized Village of Kake prefers the No-Action Alternative, Alternative A. Thank you for your attention to OVK's concerns and issues regarding the DEIS of the Kuiu Island Timber Sale on behalf of our tribal membership.

OVK  
6

Regards,



Henrich Kadake Sr.  
OVK President



## **OVK - 1**

At this time the Forest Service and the Organized Village of Kake (OVK) are working towards a Memorandum of Understanding which establishes a general framework for the exchange of information and defines the expectations of meaningful consultation between OVK and officials on the Petersburg Ranger District (District). However, at this time the agreement is not complete and at the time of the planning of the Kuiu Timber Sale this agreement had not been written. The District strives to conduct meaningful consultation. The intent of the agreement is to provide guidelines to make consultations satisfactory to both parties.

The District met with OVK, who has a cultural affiliation with the lands associated in the Project Area and on Kuiu Island, with the intent of providing an opportunity for the exchange of information. On June 3, 2004 and again in November 22, 2004, Forest Service Resource Specialists and Patricia Grantham, Petersburg District Ranger, met with Henrich Kadake, Sr., OVK President, and other OVK staff members to discuss the proposed project (DEIS Chapter 1-15, 16, Chapter 3-261, FEIS Chapters 1 and 3). These meetings included written information-sharing and government to government meetings between the District Ranger and OVK staff. In addition, the District held two Open Houses in Kake during these dates. The open houses included Project Area maps and District personnel available for discussions. On March 21, 2006, Patricia Grantham, Petersburg District Ranger, again meet with Henrick Kadake, Sr., OVK President and other OVK staff members to discuss the Kuiu Timber Sale Project. A subsistence hearing was held in Kake as per ANILCA Section 810 requirements in conjunction with this meeting. On May 21, 2006, the District Ranger and several District Specialists met with OVK staff to discuss ongoing district activities including the Kuiu Timber Sale project.

The Forest Service solicited comments from OVK regarding cultural resources in the Project Area. As stipulated in Section 106 of the National Historic Preservation Act, the Heritage Resource Specialist report was presented to OVK for review and comment. The District Archeologist made several contacts in order to update the City of Kake community profile.

## **OVK - 2**

The request urging the Forest Service to halt all planning activities related to the Kuiu Timber Sale project until the Forest Plan revision is complete has been noted.

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

## Response to OVK

The court listed its findings in *Natural Resources Defense Council v. U.S. Forest Service* but did not list any requirements within that document. In response to the court's decision the Tongass chose to amend the Forest Plan. This ruling did not put the Forest Plan "out of commission." Projects will move forward, with the Forest Plan continuing to be the guiding document and contract with the public. It would be irresponsible to stop providing raw materials to help locally-owned businesses survive and to help Southeast Alaska communities. The Forest Plan is currently being amended, but the Forest Service land-management mission cannot be put on hold. The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). TTRA states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." To provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand. This is described more fully in Appendix A of the FEIS.

### OVK - 3

The Forest Service made several attempts to involve the people of Kake with the planning process and to address the responses received. Scoping comments included the desire for small scale projects that could increase employment, and concerns over competition for subsistence items and the concern over low deer populations on Kuiu Island.

- Small timber sales were considered but dropped because they were not economical
- The competition for subsistence was analyzed in the DEIS (p. 3-86), and
- The proposed activities are not expected to result in a significant restriction of subsistence uses (DEIS p. 3-95)
- See paragraph 1 of OVK - 1

### OVK - 4

The Organized Village of Kake feels the 1960s deer use figures substantially underestimate what the use was in those years, and that this carries over into underestimating current and future demand estimated by the Alaska Department of Fish and Game. Several declarations from Kake residents attest to their remembrance of deer taken from Kuiu during the 1950s and 1960s. Several residents recall that more than 30 deer were taken by them or their families alone, and others estimate around 80 for an extended family to more than 100 for Kake people.

Kake residents have pointed out that their recent (since 1975) reliance on Admiralty Island for deer hunting is not their preference, and that as the Kuiu herds increase more of their hunting will shift back to Kuiu Island. Kake residents on average (based 1993 to 1995) take about 250 deer annually (TLMP Revision FEIS, Appendix H, p. H-76, based on 75% of their harvest being 185 deer). If all of these deer were harvested from Kuiu

the minimum deer needed to support that demand would be 2,500 deer. Table 3-29 shows that WAA 5012 would be able to meet this demand in all alternatives.

All action alternatives would result in reductions of deer habitat capability. Alternatives 2 and 3 would result in less than one percent decline in deer habitat capability. Alternatives 4 and 5 would result in a one percent decline in deer habitat capability in WAA 5012. WAA 5012 has the habitat capability to meet the population objects and support a deer population sufficient to meet the State of Alaska's population objectives and the hunter demand for the people of Kake at this time, even after applying the 36 percent reduction factor for wolf predation (DEIS, p. 3-83 Table 3-29).

### **OVK - 5**

The FEIS has been updated to include current population estimates and uses the following income and employment information.

U.S. Census data for Kake from the year 2000 shows the median household income was \$39,643, per capita income was \$17,411, and 14.61 percent of residents were living below the poverty level.

A letter dated February 2006 from the Denali Commission confirmed Kake's classification as a distressed community. Based on 2003 data, the Denali Commission estimates Kake average market income as below the \$14, 872 threshold level and that more than 70% of residents age 16 and over earned less than the threshold.

The FEIS has been updated as much as possible with the following sites used as sources:

1. Alaska Department of Commerce, Community and Economic Development community database ([www.dced.state.ak.us](http://www.dced.state.ak.us)),
2. Denali Commission website ([www.denali.gov](http://www.denali.gov)),
3. Kake Community Economic Development Strategy (2004) (the page provided)
4. U.S. Census Bureau, Census 2000 (<http://censtats.census.gov/pub/Profiles.shtml>), and
5. Personal communication with Kake Schools, OVK, the City of Kake and Jeannie Monk (Denali Commission).

The Forest Service notes that Kake Foods has not operated for the past two years and that Kake Tribal recently sold all of its logging equipment. The Forest Service also acknowledges that as income has dropped, reliance on subsistence has increased. The FEIS Environmental Justice section (FEIS Ch 3 – Socioeconomics Section) has been expanded to recognize the above-mentioned conditions in Kake and acknowledge that during times of economic hardship tribal members depend even more on the gathering of customary and traditional foods. As a result of the project, the analysis shows conditions are not expected to worsen and there may be opportunity for employment (FEIS Socioeconomics Section)

### **OVK - 6**

The preference for Alternative 1, the No-Action Alternative has been noted.



**Comment Letter #6 - Greenpeace, Sitka Conservation Society, Juneau Group of the Sierra Club, The Wilderness Society, and the Natural Resources Defense Council -GSS**

Kris Rutledge, Team Leader  
Attn: Kuiu Timber Sale  
USDA Forest Service  
PO Box 1328  
Petersburg, AK 99833

March 20, 2006

**Re: Comments on Kuiu Timber Sale DEIS**

**Sent via 1<sup>st</sup> Class Mail**

Dear Ms. Rutledge:

The following comments are submitted on behalf of the Sitka Conservation Society, Greenpeace, The Wilderness Society, Natural Resources Defense Council, and the Sierra Club on the Kuiu Timber Sale Draft Environmental Impact Statement (DEIS).

All of the organizations have a long history of involvement in the planning process on the Tongass National Forest, especially related to proposed plans for logging and road building. The organizations' memberships include hundreds of Alaskans many of whom use the Tongass National Forest and are concerned about management of its natural resources and roadless areas. Our members within the Tongass include commercial fishermen, Alaska Natives, tourism and recreation business owners, and hunters and guides. The organizations also represent thousands of Americans living outside of Alaska all of whom have a stake in the continued sustainability of the Tongass and its wildlands. The groups are committed to preserving the integrity of Southeast Alaska's natural environment and protecting its wildlands from unnecessary development.

**The Kuiu Project is Based on an Arbitrary and Unlawful Forest Plan**

- GSS 1a Planning on the Kuiu Project is directly reliant upon the 1997 TLMP. However, the 9<sup>th</sup> Circuit Court of Appeals recently invalidated the TLMP in *NRDC v. U.S. Forest Service*. The decision in *NRDC v U.S. Forest Service* requires the Forest Service to prepare a new forest plan for the Tongass. The Forest Service has begun this planning process. The National Environmental Policy Act specifically prohibits the Forest Service from making decisions that prejudice the ultimate decision on a programmatic EIS. By expending considerable agency resources to complete the NEPA analysis on the Kuiu timber project prior to completing the court-mandated revision of the Tongass Plan, the agency is prejudging the likelihood that the Kuiu project area would be considered for non-timber LUDs status, including wilderness, prior to the completion of that court mandated revision. For this reason we request that no further planning of this project continue until the new Forest Plan is finalized and an appropriate appeal period has expired.
- GSS 1b
- GSS 1c

**This Project Must Comply with the Clean Water Act and Disclose Potential Water Quality Impacts from Violations of State Water Quality Standards**

- GSS 2 Section 313(a) of the Clean Water Act provides that all federal agencies "engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants," must comply with the Clean Water Act's requirements, including limits imposed by states through the Act. 33 U.S.C. §

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1323(a). The logging and road building activities approved by the Forest Service in this sale will likely violate the standards for turbidity and sediment. As a result, the Forest Service will likely violate the Clean Water Act. In addition, NEPA requires the Forest Service to discuss the likely water quality violations and their impacts in an EIS. The Forest Service has not done this in the DEIS for Kiui.

Under the Proposed Alternative (Alternative 4), there will be the construction of 19 miles of new roads. DEIS at 2-3. This will result in a total of 41 stream crossings (Classes I – IV). DEIS at 2-19. For streams classified for all fresh water uses under 18 AAC 70.020, such as the streams in the project area, the standard for turbidity is:

May not exceed 5 nephelometric turbidity units (NTU) above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.

18 AAC 70.020(b)(12). As the most recent monitoring data indicates, the turbidity standard is often violated following the commencement of construction activities. *See* Forest Service's Annual Monitoring & Evaluation Report – 2004, Soil and Water at 21. This data suggests that activities associated with the Kiui project will violate the water quality standard for turbidity. Moreover, the Forest Service has not collected data on turbidity exceedances from the use of forest roads. *See id.* ("Additional data will be collected to evaluate turbidity during timber hauling and, eventually, road storage activities.")

The sediment standard for streams classified for water-supply uses is: "No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method." 18 AAC 70.020(b)(9). The sediment standard for streams classified for growth and propagation of fish does not permit increases more than 5% by weight above natural conditions. *Id.* The Forest Service's own studies show that logging and road building activities violate the sediment standard. For example, a 1987 report by Steven Paustian which concluded that "[s]ome short term degradation of water quality from increased turbidity and suspended particulates is unavoidable, particularly during road building." Consequently, this project will result in violations of the sediment standard.<sup>1</sup>

<sup>1</sup> The Forest Service has previously acknowledged that sediment, turbidity, and temperature "are the most likely water quality parameters to be affected by activities implemented under the Forest Plan" and that sediment is "the most important of these." 2003 Annual Monitoring & Evaluation Report at 9. Yet, the Forest Service has not monitored sediment loading in streams since the 1980s "because it is very difficult and costly to directly measure sediment transport rates with reliability." *Id.* at 10. The Forest Service is thus in violation of the Forest Plan's monitoring requirements. *See* 1997 TLMP at 6-10. Given the Forest Service's admission that short-term degradation of water quality from sediment loading is unavoidable, the Forest Service should explore cost-effective ways to monitor sediment loading in streams from logging and road building activities.

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GSS  
2 cont.

Since this project will result in violations of the turbidity and sediment standards, the Forest Service is in violation of the Clean Water Act. Moreover, the FSEIS fails to disclose these water quality violations and therefore misleads the decision-maker and the public, in contravention of NEPA.

**The NFMA Requires the Forest Service to Provide Valid Reasons for Adopting Clearcutting as a Logging Method**

The NFMA imposes significant restrictions on the use of clearcutting in the national forests and, in particular, prohibits the Forest Service from selecting a logging method primarily because it will provide the greatest financial return or output of timber. 16 U.S.C. § 1604(g)(3)(E)(iv); 36 C.F.R. § 219.27(b)(3). For the Kuiu logging project, the Forest Service has proposed clearcutting on nearly three-fourths of the acres to be logged (1,026 out of 1,425).

The NFMA provides that “the harvesting system to be used [cannot be] selected primarily because it will give the greatest dollar return or the greatest unit output of timber.” 16 U.S.C. § 1604(g)(3)(E)(iv). This provision is part of a statutory scheme in which Congress imposed substantial restrictions on the use of clearcutting. Clearcutting may be used only where “it is determined to be the optimum method” to meet the objectives and requirements of the relevant land management plan and where “such cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, esthetic resources, and the regeneration of the timber resource.” 16 U.S.C. § 1604(g)(3)(F)(i), (v). Courts have observed that these restrictions limit the discretion of the Forest Service to use clearcutting as a logging method. *See Sierra Club v. Thomas*, 105 F.3d 248, 251 (6th Cir. 1998) (clearcutting may “be used only in exceptional circumstances.”), *vacated on other grounds, Ohio Forestry Ass’n v. Sierra Club*, 523 U.S. 726 (1998); *Sierra Club v. Espy*, 38 F.3d 792, 799 (5th Cir. 1994) (Forest Service must “proceed cautiously in implementing an even-aged management alternative and only after a close examination of the effects that such management will have on other forest resources.”).

There are sound reasons for Congress’s decision to impose limitations on clearcutting. Clearcutting removes important habitat and therefore negatively affects wildlife populations. This, in turn, harms sport and subsistence hunting opportunities. Clearcutting also increases the occurrence of landslides three-fold, as compared to unlogged areas, thereby creating risks to water quality and fish. Selective logging methods also have less visual impact. Since scenery and wildlife are the main reasons people visit and use the Tongass, changes from the natural settings, especially clearcuts, harm recreation and tourism uses. Conversely, selection logging methods that mimic natural, small-scale disturbance patterns are likely to protect significantly more of these resources.

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3a

In the DEIS, the Forest Service sates clearcutting would improve “[f]orest health and commercial productivity . . . by removing dwarf mistletoe-infected trees and trees infected by disease; and by creating younger, faster-growing forests.” DEIS at 3-171. Clearcutting based on these reasons, however, serves no ecological purpose. These reasons are merely different ways of seeking the “greatest dollar return or the greatest unit output of timber,” in violation of the NFMA. 16 U.S.C. § 1604(g)(3)(E)(iv).

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GSS  
3a cont.

Dwarf mistletoe is a naturally occurring, native parasitic plant which, in southeast Alaska, affects only western hemlock. When an area is clearcut, the chance for infestation of the future stand is reduced. Eradicating or preventing the spread of dwarf mistletoe, however, serves no purpose other than to promote future timber production. Dwarf mistletoe is native to and an important ecological component of the Tongass, influencing stand structure, species composition, and wildlife habitat. It provides nesting sites and food sources for many species of wildlife. Similarly, wood decay fungi create canopy gaps and wildlife habitat and “play an important role in nutrient cycling.” DEIS at 3-169. There is therefore no ecological reason to prevent the spread of dwarf mistletoe or decay fungi, other than to achieve the “greatest output of timber,” which cannot be a primary reason for selecting clearcutting. 16 U.S.C. § 1604(g)(3)(E)(iv). Moreover, as the DEIS admits, the “occurrence of dwarf mistletoe is relatively light” in the project area. DEIS at 3-169.

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The DEIS also suggests that the Forest Service may rely on windthrow as a potential justification for clearcutting. Windthrow is a naturally occurring event that plays an ecological function in the forest renewal process. According to the TLMP FEIS, windthrow may be part of “the most important natural process in renewing the forest in Southeast.” TLMP FEIS at 3-270. While the fallen trees serve an ecological function, they do not benefit timber production. Thus, to avoid the “risk” that some of the remaining trees will blow down, the Forest Service has simply chosen to cut them all, *i.e.*, clearcut. Accordingly, this justification is intended to maximize “output of timber” and cannot be a primary reason for selecting clearcutting. 16 U.S.C. § 1604(g)(3)(E)(iv).

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In sum, the Forest Service has elected to clearcut most of the acres to be logged and the reasons for that decision are to achieve the greatest dollar return or greatest output of timber. Consequently, the proposed sale will violate the NFMA.

**The DEIS Relies On Outdated And Demonstrably Inaccurate Projections Of Market Demand**

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The Kuiu DEIS relies on erroneous market demand calculations, and the Forest Service must revise the DEIS to consider whether this logging is necessary to meet the demand.

The Tongass Land Management Plan relies on projections developed in 1997 to project market demand for Tongass timber. *See* TLMP ROD at 25 (citing Brooks & Haynes, *Timber Products Output and Timber Harvest in Alaska: Projections for 1997-2010* at 1 (1997)). These projections rely on a series of assumptions about domestic and foreign markets and the ability of the industry to use and sell low-grade logs and other “manufacturing residues.” Brooks & Haynes at 4-5.

In light of the end of long-term timber contracts and declining Japanese markets, the Brooks and Haynes demand forecasts have proved to be significantly too high. *See* Lisa K. Crone, *Rural Manufacturing and the U.S. Wood Products Industry: Trends and Influences on Rural Areas, in Economic Growth and Change in Southeast Alaska* (Rhonda Mazza tech ed., United States Dep’t of Agriculture, Forest Service July 2004), at 43-54 (general technical report) (discussing changes in the Southeast Alaska timber market)); Forest & Land Management, Inc. & Anderson &



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Associates, Inc., *Market Outlook for Alaska Mental Health Trust Timberlands* (March 2004) (detailing the decline of the Japanese export market for Alaska timber). During the first three fiscal years after the projections were made, Ketchikan Pulp Company (KPC) was completing the logging required under its long-term contract and a cancellation agreement. *See* KPC Settlement Agreement. In 1999, the Agreement was extended to allow KPC one extra year to cut the allocated timber. *See* KPC Contract Extension. During the fiscal years 1998, 1999, and 2000, with the stimulus provided by the KPC cancellation agreement and its extension, logging averaged 138 MMBF/year. *See* logging graphs. As soon as those agreements expired, however, cutting levels plummeted to a level far below the Brooks and Haynes projections:

	<u>B&amp;H High</u> <u>(MMBF)</u>	<u>B&amp;H Medium</u> <u>(MMBF)</u>	<u>B&amp;H Low</u> <u>(MMBF)</u>	<u>Actual Volume</u> <u>Cut (MMBF)</u>
FY 2001	158	129	105	48
FY 2002	173	135	114	34
FY 2003	189	141	123	51
FY 2004	205	147	132	46
FY 2005	221	152	132	50
Average	189	141	121	46

*See Kuiu DEIS at A-4 (Table A-1).* These are approximately the cutting levels that prevailed before the 50-year pulp mill contracts, when the average yearly cut was about 41 MMBF. *See 1997 TLMP FEIS at 3-259.*

Declining markets and logging levels led Gateway Forest Products, Inc. and Silver Bay Logging, Inc. to file for bankruptcy protection after 2000. The steady market decline also led to an emergency extension of time for companies to log Tongass timber under contract, and later the cancellation of 20 timber sale contracts. *See* Extension of Certain Alaska Timber Sale Contracts, 67 Fed. Reg. 51,165, 51,166-67 (Aug. 7, 2002)); timber sale cancellations. The Forest Service has continued to offer more timber volume than the average volume sold or harvested. *See* Lisa K. Crone, Southeast Alaska Economics: A Resource-abundant Region Competing in a Global Marketplace, in 72 Landscape and Urban Planning 215, 230 (2005).

GSS  
4b { The Kuiu DEIS relies explicitly on the market demand projections made in 1997 to justify its decision to offer timber. Those projections have not been updated to reflect dramatically changed market conditions. Actual logging levels show that even the lowest of the 1997 projections have proven dramatically too high. Thus, the continued reliance on these outdated market demand projections misleads the public by presenting an inflated view of the market for Tongass timber and by creating the false impression that this sale is needed to meet demand.

### **A. The Kuiu DEIS Relies Explicitly on the 1997 Projections to Justify the Decision to Offer Timber.**

The proposed Kuiu timber sale is justified in large part by the stated need to meet market demand. *See* DEIS at 1-3 (Part of the purpose and need for the project is to provide "a timber supply



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sufficient to meet the annual market demand for the Tongass National Forest” and to meet the market demand for the planning cycle.). Appendix A of the DEIS summarizes the process by which short and long term market demand is forecast. *See* Kuiu DEIS at A-6 to A-18. This discussion of market demand reveals that both the projections and the planning process rely fundamentally on the 1997 projections. *See* DEIS at A-7 (stating that the formulas and procedures used to forecast annual market demand are derived from two reports: *Responding to the Market Demand for Tongass Timber* (Morse, April 2000) and *Tongass National Forest Timber Sale Procedures* (Morse, October 2000)).

The Morse formula, which provides the formula for determining market demand, relies critically on the 1997 Brooks and Haynes projections. *See* Morse Report at 8-10 (explaining the projections and describing them as “Ten-Year Harvest Projections”). Indeed, the model specifically “incorporates” the 1997 projections. *Id.* at 28. Further, the model operates on the “assum[ption] that, at a minimum, processors will want to replace the volume removed from inventory.” *Id.* Each year, the “amount removed from inventory” is assumed to be, at a minimum, the 1997 projections. *Id.* (stating that the model uses “[h]arvest projections developed by the PNW Research Station”); *see also* 2001, 2002, & 2003 Offer Projections and 2006 Annual Demand) (using 1997 projections in line K of formula). The DEIS also presents annual logging level projections from 1998-2007 in a table entitled, “Projected and Actual Tongass Harvest (MMBF).” DEIS at A-4. A footnote to the table indicates that it is based on the Morse report from April 2000 and the Brooks and Haynes 1997 projections. DEIS at A-4, n.1. The table was created in 2000, and the Forest Service has not changed the projections in it at all since that time. *Compare id.* (Table A-1) *with* Morse Report at Table 1.

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In short, the entire “annual market demand” calculation assumes the need to meet the 1997 Brooks and Haynes projections. If the 1997 projections are too high, the annual market demand calculation will be too high.

### **B. The 1997 Market Demand Projections are Outdated, and The Forest Service Has Recognized That Changed Conditions Have Undermined Several Important Assumptions Underlying Them.**

A few years after the 1997 demand projections were made, the market for Tongass timber declined dramatically and has remained at that lower level. Since 2000, when the last timber was cut pursuant to the long-term contracts and KPC Settlement, the average cut from the Tongass has been about 46 mmbf/year, less than half of the “low” scenario projected in 1997. This decline in logging levels has been accompanied by changes in the world market, including lower prices, reduced share of the Japanese market, and the inability to sell chipped logs. These market changes undermine several of the basic assumptions on which the 1997 projections were based, and continued reliance on the outdated and demonstrably inaccurate projections misleads the public in violation of NEPA.

The 1997 projections are based on a series of explicit assumptions. *See* Brooks & Haynes at 6-8. These assumptions include predictions about Japanese markets, the ability to sell chipped logs and other “manufacturing residues,” and the share of Alaskan lumber shipped to domestic markets.

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*Id.* at 8; *see also* 1997 TLMP FEIS App. M at M-6. Each of the three demand scenarios projected (low, medium, high) included different assumptions with regard to the variables. *See* Brooks & Haynes at 5. Even the assumptions included in the “low” scenario, however, have proven too high. For each variable, market conditions have proven worse than projected.

In the low scenario, the 1997 projections assume that North America supplies “70 percent ... of Japanese softwood lumber imports ....” *See* Brooks & Haynes at 9. In fact, “North America accounted for just 61 percent of Japanese softwood lumber imports in 1999.” Wilderness SEIS at 3-288; *see also id.* at 3-253 (“the value of [Tongass timber exports to Japan] has declined by more than half over the last five years.”); *See* at 1 (USFS letter to the editor) (“Extremely soft Asian markets are the principal reason for [the] lack of interest in our timber offerings. Demand actually declined about ten percent per month from July to November.”); *See* at 11 (2001-02 Section 706(a) Report at 9) (explaining declining Japanese markets). In July 2003, the Forest Service explained: “The Pacific Rim market for timber products has considerably changed due to new suppliers and modifications to Japanese building codes. The Alaska industry struggles to replace the demand.” *See* 1 (USFS briefing paper). A recent report confirms these trends in the Japanese market, yet speculates that the dwindling export market is still a “better option for Alaska timber markets” than the domestic market. *See Market Outlook for Alaska Mental Health Trust Timberlands* at 12); *See* Crone, *Southeast Alaska Economics* (discussing the same trends); and Crone, *Rural Manufacturing and the U.S. Wood Products Industry* at 55 (stating that, despite efforts to revive the market for Alaskan wood products, “most observers . . . believe it is unlikely that production and employment will return to their previous levels” in the southeast Alaskan wood products industry).

Second, the 1997 projections assumed that 15 to 35 percent of the lumber produced in Southeast Alaska would go to supply domestic markets. *See* Brooks & Haynes at 4. The loss of Japanese markets, however, has greatly increased the relative share of production going to domestic markets, where prices are considerably lower. Wilderness SEIS at 3-253. Seventy-one percent of Southeast Alaska lumber production now goes to domestic markets, more than double what Brooks and Haynes assumed. *See id.* (62% to continental U.S. plus 9% to Alaska); *see also* at 3 (2001-02 Section 706(a) Report at 1) (“evidence suggests that a substantial proportion of regional product is now being shipped to domestic markets....”). [This substantial increase in the percentage going to domestic markets triggers a requirement contained in the Morse Report to update the Brooks and Haynes projections: “If it can be documented that sales to domestic markets account for more than 35 percent of lumber production in Southeast Alaska, revise the ten-year harvest forecast.” Morse Report at 34. Thus, according to the Forest Service’s own criteria, the Forest Service should have updated the Brooks and Haynes projections years ago.]

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Another assumption that did not materialize was the prediction that, following the closure of the Alaska pulp mills, new markets would be found for low-grade timber. *See* Brooks & Haynes at 4 (“For these revised scenarios, we assumed that alternative markets, either export or domestic, can be developed for chips, low-grade saw logs, and utility grade logs. In the absence of markets, low-grade saw logs and utility logs may be left as logging residues.”); TLMP FEIS App. M at M-6 (“All the projections assume that lower grade material that was previously directed to pulp production, including the low-grade sawtimber previously directed to the KPC pulp mill, can be

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exported.”). The Forest Service has acknowledged that there is no such market any longer: “While these data indicate that a market existed for chips in 2000, this is no longer the case.” Wilderness SEIS at 3-252 to 3-253.

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Thus, several of the fundamental assumptions underlying the 1997 projections have not come to fruition, and markets have declined much further than those projections contemplated. Nonetheless, the Kuiu DEIS relies on the 1997 projections without disclosing the changes in market conditions or explaining that the annual offer level determination is based on the outdated projections. Without that information, the DEIS presents the misleading impression that offering timber from Kuiu is necessary to meet demand. This presentation violates NEPA.

**The Restriction Of Subsistence Uses Caused By The  
Kuiu Project Is Not “Necessary.”**

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Pursuant to section 810(a)(3)(A) of the Alaska National Interest Lands Conservation Act (ANILCA), 16 U.S.C. § 3120(a)(3)(A), the Kuiu DEIS includes a finding that the possibility of a significant restriction on subsistence uses of deer is “necessary, consistent with sound management principles for the utilization of public lands.” DEIS at 3-96. The explanation for this finding is that “the Kuiu Timber Sale is necessary as a component of the timber management program designed to implement the Forest Plan and to meet TTRA direction.” DEIS at 3-93. Because both the Forest Plan and the market demand calculation to meet TTRA direction were arbitrary, this finding is also arbitrary.

In *Natural Resources Defense Council v. United States Forest Service*, the Ninth Circuit held that the Forest Service acted arbitrarily in adopting the Forest Plan. 421 F.3d at 806-10. The agency mistakenly doubled its projections of demand for Tongass timber, a mistake that was significant in the agency’s selection of an alternative to adopt as the Forest Plan. *Id.* at 807-10. The court also held that the EIS prepared by the agency in support of the Plan was inadequate, because, among other things, the agency had failed to consider reasonable alternatives that would have allocated less land to logging while still meeting market demand for timber. *Id.* at 813-14. The premise of the decision was that, had the agency correctly understood the projected demand for timber, it could have fully met the market demand goals without logging lands most sensitive to disturbance. *See* 421 F.3d at 808 (“if the demand for timber was mistakenly exaggerated, it follows that the timber harvest goal may have been given precedence over the competing environmental and recreational goals without justification sufficient to support the agency’s balancing of these goals.”); *see also id.* at 814 (“Because the range of alternatives considered by the EIS omits the viable alternative of allocating less unspoiled area to development [Land Use Designations], we hold that the EIS is inadequate, in violation of NEPA.”).

The Kuiu Project Area is within the traditional subsistence use area of Kake, and the DEIS recognizes that deer on Kuiu Island are “extremely important” for subsistence users in all of the communities in the region. *See* DEIS at 3-49, 3-76 to 3-77. Kuiu Island provides a great deal of high value winter habitat for deer, and the proposed logging and road building will impact much of that habitat. *See* DEIS at 3-23. Thus, even if the Kuiu Timber Sale were based on a rational projection of market demand (rather than the erroneous projections of the Tongass Land



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Management Plan), the “necessary” finding would still be arbitrary. That demand could have been met from areas less sensitive to logging.

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However, the Forest Service also acted arbitrarily in calculating the market demand in the Kuiu DEIS, which forms part of the basis for the agency’s conclusion that the significant restriction to subsistence was “necessary.” See DEIS at 3-93 (discussing the need to meet market demand). While the DEIS does not repeat the doubling error of the Tongass Land Management Plan, it does fail to consider abundant, compelling evidence that actual market demand is significantly lower than projected.

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In short, the finding that the significant possibility of significant restriction to subsistence uses caused by the Kuiu Timber Sale is “necessary, consistent with sound management principles for the utilization of the public lands,” is not supported by the Forest Service’s own acknowledgment that actual demand levels are significantly lower than the levels projected. The failure to consider this evidence renders the finding arbitrary.

### **The Kuiu Timber Sale DEIS Lacks A Meaningful Economic Analysis**

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There a lack of accurate information on the costs that have been, and will be necessary, to prepare, offer, and administer the Kuiu Project. That information is required as part of the Financial Efficiency Analysis, and its omission prevents the public and decision makers from accurately evaluating the financial costs and benefits of the alternatives and from measuring the return to the public for its investment in administering any potential logging in the Kuiu Project Area. Information in the DEIS on expenditures already made for ‘pre-roading’ the project area is totally absent. The DEIS contains no discussion of the effects of exporting round logs, for species other than AYC.

### **The DEIS Does Not Disclose Public Costs and it Misleads the Public and Decision-makers**

In planning a timber sale project, the Forest Service is required to compare the public money it will spend administering the project with the prospective returns to the agency. That analysis, which “compares estimated Forest Service expenditures with estimated financial revenues”, allows the decision maker and the public to gain some understanding of “the future financial position of the program if the project is implemented.” Forest Service Handbook § 2409.18\_30.

This comparison of public costs and returns, called a Financial Efficiency Analysis, is required by the Forest Service Handbook and by NEPA. See Forest Service Handbook §§ 2409.18\_20 at 5-6, 2409.18\_10 at 10, 2409.18\_30 at 7; 40 C.F.R. § 1508.8(b) (“Effects includes ecological . . . aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.”); *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996) (“NEPA requires agencies to balance a project’s economic benefits against its adverse environmental effects.”).



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Indeed, the DEIS states in its section on Economic Efficiency (DEIS 3-259), “Economic efficiency compares the costs and benefits of resources, whether or not they can be quantified. It is another tool used in the decision making process to gain full information, both quantitative and qualitative, about a project and differences among alternatives”. The DEIS then only discusses non-quantifiable values. The only information revealed regarding ‘Public Investment’ costs is when the DEIS states that “The average Region 10 budget allocation costs and management expenses are subtracted from net stumpage values to determine net value and gives the an allocation figure of \$101.00 per mbf (DEIS 3-107-108). That analysis, however, does not contain any discussion or estimation of the public costs that have been or will be incurred by the Forest Service in, planning, preparing, and administering the Kuiu Timber Sale Project. Accordingly, the DEIS does not comply with the Forest Service Handbook or its own description of the Financial Efficiency Analysis.

This failure is particularly egregious given the central role played by economics in the decision making process for the Kuiu Timber Sale Project. Economics is identified in the DEIS as one of four “significant issues” for analysis and is a major component of the Purpose and Need statement of the DEIS. Moreover, the benefits associated with logging in the Kuiu Project Area are almost entirely financial. Indeed the DEIS devotes pages to discussing ‘Timber Sale Economics’ in terms of profitability for sale operators (DEIS 3-97-105) and only a couple of short paragraphs to the public costs of the sale. Thus, economic benefits from logging – whether to timber companies, mills, local economies, or the Forest Service – provides the basic justification for offering timber in this area.

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To remedy this deficiency, the Forest Service must supplement the Kuiu DEIS with an accurate estimate of the costs that will be incurred by the public. That cost must then be factored into a Financial Efficiency Analysis to allow the public and decision maker to understand fully the financial ramifications of any approved logging in the Kuiu Project Area.

### **The Budget Allocation Costs Used in the DEIS are Inaccurate**

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Even the limited analysis undertaken in the planning record is insufficient. The “project costs” identified in the DEIS are based on the “Region 10 Budget Allocation Estimates” (DEIS 3-107-108). Those estimates are outdated and dramatically understate actual Forest Service expenses. The Forest Service actually loses millions of dollars annually administering the Tongass timber sale program and those losses are not reflected in the budget allocation estimates.

The Forest Service is required to maintain annual records of its expenses involved in administering the Tongass timber sale program. Pursuant to the 1997 TLMP, the Forest Service must monitor its annual expenditures and evaluate whether the “costs associated with carrying out the planned management prescriptions (including those of producing outputs) [are] consistent with those estimated in the Plan.” These expenses are reported and the monitoring questions analyzed each year in an Annual Monitoring & Evaluation Report. See 1997 Tongass Land Management Plan Revision at 6-16 (Forest Service must monitor annual expenditures and evaluate whether the “costs associated with carrying out the planned management prescriptions (including those of

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producing outputs) [are] consistent with those estimated in the Plan.”). These monitoring reports reflect the actual expenditures made by the Forest Service each year on timber-related activities and, accordingly, provide a more accurate basis for estimating Forest Service costs associated with timber sale projects. The following analysis is taken in part from the ‘Administrative Appeal of the Emerald Bay Timber Sale Project ROD’ filed on January 5<sup>th</sup> 2006, by the Southeast Alaska Conservation Council, the Sitka Conservation Society, the Tongass Conservation Society, The Wilderness Society, the Natural Resource Defense Council, Greenpeace, and the Sierra Club. We incorporate that document by reference here.

According to the 1997 FEIS for the Tongass Land Management Plan, six categories of expenditures are “related to timber management activities:” Timber Sale Management,<sup>2</sup> Timber Road Construction,<sup>3</sup> Road Maintenance,<sup>4</sup> General Administration,<sup>5</sup> Ecosystem Planning, Inventory and Monitoring,<sup>6</sup> and Forest Vegetation Management. See 1997 TLMP FEIS at 3-505. For FY 98-03, the Monitoring Reports disclose the following annual logging-related expenditures in those categories:

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<sup>2</sup> “Timber Sales Management includes project level timber sale planning (including resource support), silvicultural examinations, sale preparations (including resource support), and harvest administration.” 1997 TLMP FEIS at 3-505.

<sup>3</sup> “Timber Road Construction includes engineering, planning, and administration of road contracts for timber sale road building.” 1997 TLMP FEIS at 3-505.

<sup>4</sup> “Road Maintenance supports the main transportation system to provide safe and efficient access for the multiple uses of National Forest lands that is compatible with ecosystem management principles.” 1997 TLMP FEIS at 3-505.

<sup>5</sup> “General Administration provides line management and indirect administrative support and common services to the extent that benefiting programs or projects cannot be identified.” 1997 TLMP FEIS at 3-505.

<sup>6</sup> “Ecosystem Planning, Inventory and Monitoring” is defined by the FEIS to include

all resource planning costs of fulfilling the requirements of the National Forest Management Act, including appeals and litigation related to forest planning, the inventory and assessment of resources on NFS lands at the Forest Plan level, and the monitoring and evaluation of forest plan implementation over time. The costs vary by alternative due to the monitoring plan, which is tied to output level; those alternatives with less timber harvesting will have less areas to be monitored.

1997 TLMP FEIS at 3-505.

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	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Timber Management	\$19,842,546	\$19,842,546	\$14,524,473	\$21,192,221	\$17,923,470	\$12,833,100
Road Construction	\$7,685,131	\$7,685,131	\$3,763,542	\$13,180,325	\$15,039,240	\$17,961,400
Road Maintenance			\$3,082,257			
General Administration	\$5,689,191	\$5,689,191	\$3,842,025			
Ecosystem Planning/ Inventorying/ Monitoring	\$3,112,283	\$3,112,283	\$1,404,772	\$2,613,940	\$3,040,030	\$2,071,200
Forest Vegetation Management	\$1,577,701	\$1,577,701	\$933,105			
<b>Total:</b>	<b>\$37,906,852</b>	<b>\$37,906,852</b>	<b>\$27,550,174</b>	<b>\$36,986,486</b>	<b>\$36,002,740</b>	<b>\$32,865,700</b>
<b>Logging Level (MMBF)</b>	120	146	147	48	34	51
<b>Cost/mbf</b>	\$316	\$260	\$187	\$771	\$1056	\$577
<b>Cost/CCF</b>	\$155	\$127	\$92	\$378	\$517	\$283

Using these more accurate numbers, the actual cost incurred by the Forest Service in administering the Tongass timber sale program between 1998-2003 averaged \$516/mbf logged—more than five times the \$101.0/mbf average cost reflected in the Forest Service's assessment of the costs and revenues of the various alternatives. After the end of its long-term timber contracts in 2001, the Forest Service's average cost rose to \$786/mbf logged—more than eight times the 'Budget Allocation' cost estimates used in the Kuiu DEIS.

Those numbers present a stark contrast to the income received by the Forest Service from timber logged on the Tongass. In FY 1998, income to the Forest Service for timber logged in the Tongass totaled approximately \$4,992,000 (1998 Cut and Sold Report). That number rose to approximately \$5,456,000 in FY 1999 (1999 Cut and Sold Report), and again in FY 2000 to approximately \$5,582,000 (2000 Cut and Sold Report). Revenue then declined to approximately \$1,855,000 in FY 2001, approximately \$1,242,000 in FY 2002, and approximately \$1,464,000 in FY 2003 (2001, 2002, 2003 Cut and Sold Reports). In the last two years, it has declined even further to approximately \$792,000 in FY 2004 and approximately \$578,000 in 2005. (2004, 2005 Cut and Sold Reports). These expense and receipt numbers paint a picture of dramatic losses to the public occasioned by the timber sale program on the Tongass



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GSS  
8a cont. The budget estimates used by the Forest Service to present the likely costs to the public of planning, preparing, and administering the Kuiu Timber Sale Project grossly understate the actual expenses that will be incurred by the agency.

### Cost Benefit Analysis Tiers to an Invalid Forest Plan

GSS  
8b The DEIS states “Economic efficiency analysis or cost/benefit analysis is best done at a scale much larger than a project area. A regional scale economic analysis is presented in the Forest Plan FEIS Part Two, which balances resource uses and values for the Tongass National Forest” (DEIS 3-108). Not only must a financial efficiency analysis be done at the project level, comparing quantifiable costs and benefits, as we have made clear in the proceeding section, but the Forest Service can’t tier to a Forest Plan that has been declared invalid precisely because it failed to achieve a proper balancing of uses due to a faulty ‘Market Demand Analysis’.

### Forest Service Spending on Kuiu Roads Prejudices the NEPA Process

GSS  
9a During the summer of 2005 the Forest Service contracted with Channel Construction of Juneau to up-grade the Kuiu Project Area roads (Kuiu Roads Maintenance, Forest Development Project, solicitation number IFB-R10-05-071). Specifically Roads 6402, 6448, 6404, and 6415 were re-constructed and were done so prior to the Kuiu Timber Sale Project’s NEPA process being completed. As the DEIS states “None of these roads connect to any community, other public roads, or other public transportation system. All of the forest roads were constructed in support of timber sales...” (DEIS 3-217). This demonstrates that there is little or no public transportation purpose for reconstructing these roads. The Public Works Contract involved widening the surface, removing stumps, and other activities that demonstrate that the contract’s purpose *included* getting the Kuiu Timber Project Area ready for the proposed sale. Having already expended \$161,465.90 on ‘pre-roading the project area prejudices the outcome of the NEPA process. It was done without any public process or evaluation of the environmental impacts resulting from the re-construction. The DEIS failed to disclose that these expenditures had already been made. Kuiu is not an isolated case of pre-decisional road-building using maintenance as the guise. Other cases are Traitors Cove (Francis Cove roads project), Zarembo roads project, and the Overlook roads project. The DEIS must discuss all quantifiable public investment costs.

### The DEIS Fails to Disclose The Public Investment Costs of ‘Pre-roading’

GSS  
9b Pre-roading has become a standard practice on the Tongass to make sales more ‘economic’ for operators. Road building contracts have been solicited, and in most cases awarded, for all of the FY 2005 large timber sales that involve new road construction. These sales are Skipping Cow, pre-roaded for \$1,138,000.00, Upper Carroll II, pre-roaded for \$1,555,000.00, Lindenburg, pre-roaded for \$391,800.00, Luck Lac II, pre-roaded for \$244,566.88, and Buckdance Madder (bid not awarded at this time). Other large sales have been pre-roaded in other years, including Finger Point for \$680,991.50, Fusion for approximately \$1,031,854.42, Summore Change II for \$2,073,739.60, Kogish-Shinaku for \$875,292.62, and Midway for \$2,695,547.00. These numbers demonstrate a consistent trend, not an aberration. The DEIS must discuss all likely public investment costs and the market context in which the project is taking place.



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**Markets and the NEAT Model**

A non-competitive market for large roadless area sales has existed for several years on the Tongass National Forest. This is made evident by the fact that the overwhelming majority of large sales between 1998 and 2005 only received one bid or no bid at all. In 2005 all large sales received only one bid. These sales, Upper Carroll II, Luck Lac II, Lindenberg, Shady, and Skipping Cow accounted for the overwhelming volume sold in FY 2005. In 2006 Buckdance Madder was also offered and received only a single bid. The DEIS's statement "In the past timber sales on the Petersburg Ranger District have had multiple bidders..." (DEIS 3-97) is a misrepresentation of the situation regarding large sales.

GSS 10a The DEIS states " Maintaining a consistent small sales offering is a component of the Petersburg Ranger District timber sale program. Due to the distance of the Kuiu Timber Sale Area from processors, it is unlikely individual units will be offered for sale (DEIS 3-105). This is an admission that any offering from the Kuiu project will be a large sale. The few mills that will be able to bid on any sale offered under the Kuiu Timber Sale Project do not constitute a competitive market for a timber sale under the Kuiu Project or any of the other large sales the Forest Service has been offering.

GSS 10b The existence of a non-competitive market is important to the proper functioning of NEAT (NEPA Economic Analysis Tool) because NEAT is a transactional system that bases its calculations of Fair Market Value on what was bid for past sales of the same size and characteristics. As shown in the above discussion most if not all of the transactions that would or will be providing input to the model have received only a single bid and have also been pre-roaded. There is no discussion of this in the Timber Economics section of the DEIS, or in the nearly non-existent public investment discussion.

GSS 10c The DEIS cites Wrangell's processing facility as being a possible beneficiary of the Kuiu Timber Sale Project with no substantiation for this claim. There is information to cast doubt on it however. Recent sales such as Skipping Cow, even though it would be pre-roaded and it is located much closer to Wrangell then the Kuiu Project Area, did not receive a bid from Silver Bay Logging. Another sale located on North Etolin Island, Red Mountain, has been offered with a blanket export waiver for all species, and including both salvage and green wood. That the Forest Service is indicating that a nearly 6 million bf sale located very close to Wrangell will be uneconomical for Silver Bay to process, is an indication of just how misleading it is to characterize the Kuiu Timber Sale Project as being likely to benefit Wrangell.

**The DEIS Fails to Discuss the Likely Impacts of Round Log Exports**

GSS 11 While the Forest Service has accounted for the export of AYC in their discussion of the economic impacts of the Kuiu Project, the DEIS does not discuss the likelihood that other species will be exported as well. Moreover, the Forest Service has failed to disclose readily available information on the permits they have granted in the recent past for the export of un-processed logs. As shown above, at least some sales are now receiving blanket export waivers. As the probability that timber

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GSS  
11 cont.

will be exported from the region un-processed bears directly on the number of jobs that may be generated by the project, this information is critical to the reviewing public and to decision makers. In regards to the Kuiu Project Area specifically, the Forest Service has granted permits for the export of un-processed Hemlock and Sitka Spruce harvested from both the Rowan Bay and Saginaw Bay areas as recently as CY 2000.

The DEIS states "Federal policy requires that timber harvested from the Tongass be processed within Southeast Alaska, supporting wood products jobs and income throughout the region" (DEIS 3-251). This statement, as shown above, is a misrepresentation of what the Forest Service actually is allowing.

### **DEIS Provides Inadequate Analysis of Impacts to Inventoried Roadless Areas (IRA) and Wilderness Character**

We are very disturbed to see that under the preferred alternative (Alternative 4) the proposed Kuiu Timber Sale Project will enter into IRAs (North Kuiu Roadless Area and Security Roadless Area). This is of particular concern in light of the very heavy fragmentation that has occurred across the Kuiu landscape from past harvest and road construction. This project would directly impact 663 acres within the North Kuiu IRA (DEIS Table 3-2) and an additional 134 acres in the Security IRA (DEIS Table 3-2). In total, 797 acres within IRAs would be negatively impacted. Additionally, approximately one mile of new road would be constructed within an IRA. Of the five action alternatives outlined in the DEIS, the preferred alternative (Alternative 4) "could have the greatest direct effect on the roadless area" (North Kuiu; Roadless Areas Resource Report for Kuiu Timber Sale Planning Area; K. Rutledge 2005). Given the strong scientific support for protecting Tongass roadless areas, including that of the TLMP Peer Review team, and the strong public sentiment that these areas should be protected, we can see no valid reason for moving forward with this sale.

GSS  
12

We are concerned about the continual loss of potential Wilderness areas on the Tongass and the impacts these losses will have on local economies as well as fish and wildlife. The DEIS fails to adequately analyze the potential impacts of the project on wilderness characteristics. The DSEIS does mention wilderness and includes excerpts from the Tongass Land Management Plan Revision Final Supplemental Environmental Impact Statement (TLMP SEIS) description of the wilderness characteristics of the North Kuiu Roadless Area (but not of the Security Roadless Area; DSEIS 3-9). The only attempt at an analysis is two sentences of vague text (DEIS 3-9). The final EIS should include a thorough analysis of the potential impacts of the proposed action on the wilderness characteristics of the North Kuiu and Security IRAs. The DEIS therefore fails to satisfy the Forest Service's obligations under NEPA to consider the environmental impacts of its proposed action.

The North Kuiu Roadless Area is especially critical to maintain as undeveloped because it is virtually the last un-logged, un-roaded fish and wildlife habitat of this portion of Kuiu. The North Kuiu IRA serves a variety of non-timber values, including important benefits to wildlife, subsistence, and recreation. This roadless area is one of the last remaining unroaded portions of North Kuiu Island. The public has repeatedly highlighted the value of maintaining the roadless

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quality of undeveloped areas on North Kuiu. For example, during the forest plan revision and appeals, "The City of Kupreanof commented that the general area (North Kuiu Island) should be preserved as a wilderness because of its subsistence value" (TLMP FSEIS App. C at 381). Further, with regards to other timber sales on North Kuiu (Crane and Rowan Mountain): "The City of Kake commented that subsistence use would be adversely affected by timber harvest, including the cultural and spiritual value of participating in traditional subsistence harvests in the old-growth forests used by the residents of Kake for countless generations" (TLMP FSEIS App. C at 381).

GSS  
12 cont.

The DEIS states "all effects would occur along the edge of the roadless area. With the ongoing influence from roads and managed stands, the effects to the overall roadless area characteristics and values would be minimal" (DEIS 3-18). This conclusion is arbitrary; the following information, addition to information above, clearly discounts the preceding statement. The North Kuiu Inventoried Roadless Area is about 9,544 acres (DEIS Table 3-1), including about 5,932 acres of high-volume, old growth forest (TLMP FSEIS App. C at 382): "The roadless area does have a relatively high amount of contiguous old growth in contrast with the surrounding lands where timber harvest has heavily fragmented the stands of old growth" TLMP FSEIS App. C at 383.

Road systems and logging activities surround this roadless area on all sides (TLMP FSEIS App. C at 377). The clearcuts that are proposed in the narrowest portion of the IRA (units 307 and 308) will effectively fragment the Kuiu IRA into two patches of isolated roadless areas surrounded by highly developed areas. This fragmentation would significantly degrade the wilderness character, ecosystem integrity and landscape connectivity important to healthy fish and wildlife populations.

The Security Inventoried Roadless Area is about 35,497 acres (TLMP FSEIS App. C at 364). This IRA was given a high rating in the Wilderness Attribute Rating System (WARS; 22 or 25; TLMP FSEIS App. C at 368). Again, the public has repeatedly highlighted the value of maintaining the roadless quality of undeveloped areas on North Kuiu (as with regards to North Kuiu IRA above). For example, during the forest plan revision and appeals, "The City of Kake suggested that Security Bay be designated as wilderness because it was the most important subsistence area left to the Village of Kake. They wanted old growth protected, especially on the west side of Security Bay (i.e. the Security Roadless Area). The City of Kupreanof commented that the area should be preserved as a wilderness because of its subsistence value" (TLMP FSEIS App. C at 371). Further, with regards to other timber sales on North Kuiu (Crane and Rowan Mountain): "The City of Kake commented that subsistence use would be adversely affected by timber harvest, including the cultural and spiritual value of participating in traditional subsistence harvests in the old-growth forests used by the residents of Kake for countless generations" (TLMP FSEIS App. C at 372).

It is particularly disappointing that the Forest Service has elected to pursue roadless area entry in this sale, given the U.S. House of Representative's bipartisan passage of the Chabot-Andrews amendment to the FY05 Interior and Related Agencies Appropriations Bill, which prohibits spending any more of taxpayers' dollars subsidizing wasteful and economically unfeasible roadbuilding projects in the Tongass National Forest. Moreover, the overwhelming majority of



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the interested public supports protecting roadless areas, including – and in many cases especially – those of the Tongass. In the past few years, the Forest Service has received literally millions of public comments supporting protections for Alaskan roadless areas, through inclusion of the Tongass (and Chugach) in the Roadless Area Conservation Rule (RACR or “Roadless Rule”). More than 7500 Alaskans participated in the RACR, and 82% of them favored protecting roadless areas in the Tongass. The American public has communicated in no uncertain terms that it feels the most valuable use of roadless areas may be realized when they are left in their unroaded condition.

We oppose the Tongass National Forest’s decision to enter roadless areas of the Kuiu Timber Sale for several over-arching reasons related to the management of roadless areas. The agency lacks an adequate rationale for entering roadless areas on North Kuiu Island. The attached letter to Chief Bosworth, dated September 2, 2003 details why roadless area entry is not needed to maintain current logging levels on the Tongass. Indeed, demand from future facilities, e.g. the would-be veneer operation in Ketchikan, that the Forest Service speculatively cited as a reason for suspending the Roadless Rule has not materialized.

**The DEIS Violates NEPA By Failing To Evaluate The Effects Of Committing The Kuiu Island Project Area To Development Before The TLMP Is Revised**

GSS  
13a

NEPA bars the Forest Service from taking certain actions while preparing a programmatic EIS. See 40 C.F.R. 1506.1(c). Under the illegal 1997 TLMP, this timber sale would illegally settle the fate of this roadless area by committing it to developed status and eliminating options for preserving it for other multiple uses through the court-mandated revision of the 1997 TLMP. Section 1506.1 bars the Forest Service from working on a proposal covered by the pending programmatic decisions unless:

GSS  
13b

- 1) *The Kuiu Timber Sale is justified independently of the programmatic decision.* The NFMA mandates that all management activities approved on national forest system lands, such as the Tongass, be consistent with a lawfully adopted forest plan. See 16 U.S.C. 1604(i). [The Forest Service cannot rely on the 1997 TLMP to justify proceeding with this timber sale because the court invalidated TLMP in *NRDC v. U.S. Forest Service*.]
- 2) *The Kuiu Island DEIS is adequate, and 3) the decision to approve this project will not tend to limit alternatives in the court-mandated TLMP revision.*

**None of these factors is satisfied in this case.**

**The DEIS Has an Inadequate Range of Alternatives**

GSS  
14

The Kuiu project area has an extensive road network, much of which has had little or no maintenance. By tying reduced open road densities in the Kuiu project area to increased timber harvest associated with this project, the DEIS creates an artificial incentive to proceed with an action alternative. We specifically request an alternative be developed that responds to the high open road density and poor state of such roads without new road construction, road reconstruction and timber harvest.



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**The Comparison of Alternatives Is Insufficient**

**Alternative Comparison Based on POG**

Table 2-2 (p.2-17) purports to compare the effect of project alternatives on wildlife habitat and subsistence; however, we contend that the table does an inadequate job. The various kinds of data on acres "maintained" (of POG, deer habitat, and coarse canopy forest) are largely irrelevant without some context. A more meaningful analysis is shown in the following table :

<b>Alternative:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Remaining POG (acres)	27,112	26,628	26,329	25,710	25,906
<b>Total POG Lost (acres)</b>	<b>-10,393</b>	<b>-10,877</b>	<b>-11,176</b>	<b>-11,795</b>	<b>-11,599</b>
Total % POG Lost	28%	29%	30%	31%	31%
<b>New POG Loss (acres)</b>	<b>0</b>	<b>- 484</b>	<b>- 783</b>	<b>- 1,402</b>	<b>- 1,206</b>
<b>New % Change in POG</b>	<b>0%</b>	<b>- 5%</b>	<b>- 8%</b>	<b>- 13%</b>	<b>- 12%</b>

For comparison of alternatives, the most important quantities here are the two rows giving percentage losses. Both rows should be included in Table 2-2, in place of the existing POG row. The analysis on p.3-39 should also incorporate this approach to show clearly the effect of the direct and cumulative effects.

**Alternative Comparison Based on Coarse Canopy Stands**

Similarly, Table 2-2 of the DEIS reports the remaining acres of coarse canopy forest, by showing the number of remaining acres. Those numbers are largely irrelevant without some context. A more meaningful comparison would show the loss in acreages and percentages, with the percentages being the key quantities, as shown here:

<b>Alternative:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Remaining Coarse Canopy Acres	13,009	12,781	12,675	12,196	12,456
<b>Total Coarse Canopy Lost (Ac)</b>	<b>-13,549</b>	<b>-13,777</b>	<b>-13,883</b>	<b>-14,362</b>	<b>-14,102</b>
Total % Coarse Canopy Lost	-51%	-52%	-52%	-54%	-53%
<b>New Coarse Canopy Loss (Ac.)</b>	<b>0</b>	<b>- 228</b>	<b>- 334</b>	<b>- 813</b>	<b>- 553</b>
<b>New % Change in Coarse Canopy</b>	<b>0%</b>	<b>- 2%</b>	<b>- 2%</b>	<b>- 6%</b>	<b>- 4%</b>

We note that the rows with percentages are shown in Table 3-12, but they are conspicuous in their absence in Table 2-2. The discussion on pp.3-40 should have discussed the meaning of these percentages.

**Alternative Comparison Based on Loss of Low-Elevation POG**

Regarding the loss of low-elevation POG, Table 2-2 and the related discussion on pp.3-18 & 19 are deficient because they show only the incremental loss of such habitat. An analysis similar to

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GSS 15c cont those above is needed, including the original (1954) and remaining acres of such habitat and the total and incremental percentages of change.

**Alternative Comparison Based on High Value deer habitat losses**

GSS 15d The row in Table 2-2 showing remaining deer habitat in the project area should be removed and be replaced with the second and third rows from Table 3-25 (p.3-58). This is the kind of data that has been described above. We note, however, that the data in these rows of Table 3-25 should be negative quantities.

**Alternative Comparison Based on Subsistence**

GSS 15e Data should be presented rather than the sentence that was embedded in Table 2-2 for the subsistence issue. The relevant data is estimated maximum carrying capacity for deer, based on use of a deer multiplier<sup>7</sup> of 100 deer/sq-mile for an HSI of 1.3. Additional rows could include ability to satisfy estimated subsistence needs for deer and the state deer population objective for the area. However, a substantial factor of safety should be incorporated to account for imprecise modeling methods (including this proscribed use of the model) and data, and to account as well as possible for severe winters (since the deer model only estimates for average winters).

**Alternative Comparison Relative to the Forest Plan Wolf Standard & Guideline**

GSS 15f The alternative comparison should include effect on wolves, and the corrected deer carrying capacity multiplier specified the section above is one way of doing this.

The Comparison of Alternatives Embedded in Chapter-3 Is Also Misleading.

There is also a comparison of alternatives on pp.3-69 to 71. All the above comments also need to be incorporated into that section.

**Direct & Cumulative Effects on Forest Habitat**

**Inadequate Habitat Loss Data Necessitates Preparation of an SDEIS**

Analysis we have done on data in DEIS Tables 3-11 & 3-12 reveals a significant problem with the data. As shown in the table below (derived from the DEIS data), the DEIS suggests that the loss of coarse canopy forest in the project area exceeds the loss of productive old-growth forest. But this is impossible.

Alternative:	1	2	3	4	5
Total POG Lost (acres)	-10,393	-10,877	-11,176	-11,795	-11,599
Total Coarse Canopy Lost (acres)	-13,549	-13,777	-13,883	-14,362	-14,102

<sup>7</sup> As discussed later, this is a correct expression of the deer multiplier, and the expression of it used in the DEIS (100 deer/sq-mile at an HSI of 1.0) is incorrect and over-estimates carrying capacity by about 33%.

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One reason the figures are not comparable is that Table 3-12 is footnoted as including losses from “natural events such as windthrow” in addition to those from logging and roadbuilding. The DEIS does not explain what was included in Table 3-11, other than “timber harvest.” It

apparently does not include POG lost in natural events, and also might not include losses from roadbuilding. The POG table should be updated to be comparable to the coarse canopy table in every respect, and if possible natural and directly or indirectly man-caused losses should be shown separately in both tables.

Fatal weaknesses of the DEIS are that it does present complete data for both the loss of POG and of coarse canopy forest and that it does not sufficiently describe the nature of the data. These weaknesses make it impossible for us to evaluate and comment on the likely impacts of the project alternatives to wildlife and subsistence.

It is necessary that the next Kuiu EIS evaluate impacts to POG in the same way such impacts have been evaluated for coarse canopy. The combined effects of natural and human-caused losses of POG must be evaluated, and the percent changes in amount of POG from historic and current conditions must be considered. The proportion coarse canopy in the POG losses also needs to be evaluated. Similarly, losses of the better habitat quality stands of TimTyp Class 5 forest need to be evaluated too.

### Analyses of Direct and Cumulative Effects on the Forest Matrix Were Incomplete

The DEIS states (p.3-41) that “within the project area (at) least 35 percent of the matrix lands are unavailable for timber harvest consideration” and that “they will remain standing throughout the 100 year planning horizon” (sic). Then on the next page the DEIS purports to discuss direct and indirect timber program effects on the matrix in the project area. In reality, however, the discussion is entirely about the amounts of POG and coarse canopy forest that would remain generally throughout the project area, not how much of those kinds of forest in the matrix remain now or will remain in the future.

We contend that the discussion of forest in the matrix needs to consider POG, TimTyp, elevation, and aspect in evaluating direct, indirect and cumulative effects on the matrix. The contexts considered need to be historic (1954), current, project, and other foreseeable logging (each expressed in terms of post-canopy closure conditions where applicable).

### **Use of the Vol-Strata Dataset in Wildlife Modeling and Analysis Should Be Abandoned.**

The Vol-Strata dataset and the DeGayner (1997) deer model (which uses that dataset) are not appropriate for wildlife analysis. A recent Forest Service study said this about the Vol-Strata dataset: “Although the 1997 TLMP timber-volume map<sup>8</sup> adequately portrays timber-volume information, the revised map<sup>9</sup> does not adequately portray or model forest structure, ecosystem diversity, or wildlife habitat.” (Caouette and DeGayner (2005), p.51) Another Forest Service

<sup>8</sup> This is an expression of the Vol-Strata dataset in the form of a map.

<sup>9</sup> This refers to the same map (the “1997 timber-volume map”) and its underlying Vol-Strata dataset.



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GSS  
18 cont.

study also commented on the Vol-Strata and datasets like it: “There seems to be no correlation between timber volume and forest structure,” and that “any forest stratification that has timber as its primary objective<sup>10</sup> will necessarily group together stands of similar timber volume regardless of differences in forest structure.” (Caouette et al. (2000), pp.9 & 17) Therefore, Vol-Strata should not be used at all for wildlife analysis (contrary to what has been done throughout the Kuiu DEIS).

The principles described above are evident in further documentation provided in Attachment 1 of our comments.

### **TimTyp Should Be Used In Place Of Vol-Strata For Wildlife Modeling & Analysis.**

GSS  
19

The TimTyp dataset should be used instead of the Vol-Strata dataset for all wildlife modeling and analysis, until such time that it may be replaced by a better dataset.<sup>11</sup>

The Forest Service replaced the TimTyp dataset with Vol-Strata only because the agency misinterpreted a court order and because it misunderstood the true nature and applicability of the two datasets.

The Court Order: In responding to comments on the Scott Peak DEIS, the Forest Service revealed that it believes abandonment of the TimTyp dataset for wildlife analysis was dictated by a court order in The Wildlife Society v. Barton (1994). (See Scott Peak FEIS, p.C-50. The court Order is in Attachment 2; please add it to the planning record.) We believe that notion has been disproved in the Greenpeace et al. (2006) appeal of the Scott Peak FEIS/ROD, and incorporate that argument here by reference (and ask that it be included in the project record and be considered). Briefly, the ruling was specific to the particular use of the TimTyp volume classes for determining the “proportionality” of timber sales under two long-term timber contracts in a manner specified in the Tongass Timber Reform Act.<sup>12</sup> The ruling did not proscribe any other uses of TimTyp (such as those we advocate for wildlife modeling and analysis) – the order ruled out the specific use of TimTyp to determine timber inventory volumes because TimTyp is inaccurate for that particular application. Forest Service scientists familiar with TimTyp and the court order have similarly recognized the Order’s narrowness, by saying the “judge ruled that the Forest Service’s timber-volume classes represented arbitrary and capricious information for meeting requirements of the proportionality law.” (Caouette & DeGayner 2005, p.50 in jrnal, emphasis added.)

Reliance on Vol-Strata Rather Than TimTyp Is Arbitrary & Capricious: We contend that the Forest Service’s reliance on the court order for abandoning the use of TimTyp in wildlife

<sup>10</sup> Significantly, TimTyp failed in this objective, but because of how it was constructed through forest photointerpretation it accidentally is a good indicator of forest structure instead. Therefore, while this statement applies to Vol-Strata it does not apply to TimTyp.

<sup>11</sup> The Forest Service has been working on a prospective dataset, but it is untested regarding habitat.

<sup>12</sup> The long-term contracts are no longer in force, and the Forest Service no longer uses the TTRA proportionality requirement, saying it applies only to those contracts.



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modeling and analysis was unreasonable because the court order did not address those uses and because TimTyp is in fact useful for those purposes. Although TimTyp was originally intended to report net timber volume,<sup>13</sup> it failed at that purpose but turned out to be a good indicator of forest structure (Caouette et al. 2000), and has been recognized by wildlife biologists as a good indicator of old-growth habitat quality. (Sources are numerous.) In fact, the Forest Service itself has reverted to using TimTyp for evaluating coarse canopy forest (while still rejecting it for other wildlife analysis purposes), as is evident in the DEIS.

The abandonment of TimTyp would not necessarily have been a problem if the dataset that replaced it (Vol-Strata) had a strong correlation to habitat quality and was therefore a suitable replacement. That, however, was not the case. Such being the case, we believe the Forest Service's continuing use of Vol-Strata for wildlife modeling and analysis and its refusal to replace Vol-Strata with TimTyp for those purposes is arbitrary and capricious.<sup>14</sup>

### **"Canopy Texture Classes" Should Be Used To Augment the TimTyp Dataset.**

Caouette et al. (2000) tested the theory that canopy texture is an obvious and intuitive forest attribute that can be recognized and delineated from aerial photos. The test compared photointerpretation (done by an experienced Tongass photointerpreter) of four forest canopy "texture classes"<sup>15</sup> against ground-measured forest structure attributes. The test found a correlation between the texture designations and forest structure. (See Caouette et al. 2000, pp.14-15 and Fig. 9.) In its Discussion section the paper concluded that "differences among texture classes coincide with the long axis of the TPA-QMD<sup>16</sup> data cluster similar to differences observed among" TimTyp classes.<sup>17</sup> In fact, superimposing Fig. 6-B (showing TimTyp) and Fig. 9 (showing canopy texture classes), the clusters are very close.

Therefore, at the project level a useful analytic tool can be created by delineating and digitizing canopy texture classes on aerial photos of the project area and other larger areas of analytic interest (e.g. the ecological subsection and WAAs that are relevant to wildlife considerations). Creating this database for the Kuiu project EIS is vitally important because of known limitations of the TimTyp and VolStrata datasets that are relied upon heavily in project-level wildlife analysis. These limitations include large polygon sizes and some inaccuracies. The limitations are not a hindrance for Forest-level planning, but can result in non-disclosure of site-specific habitat characteristics and impacts that become important in NEPA analysis and planning at the project level.

<sup>13</sup> TimTyp segmented the forest into "volume classes," which we call "TimTyp classes" to avoid the significant confusion that the term "volume" creates. TimTyp shows forest structure, not timber volume.

<sup>14</sup> Vol-Strata is, however, suited to estimating timber inventory volumes.

<sup>15</sup> Caouette et al. (2000) alternately refers to "canopy texture classes" as "canopy texture descriptors." We use the former term here because it is more intuitive and because it is the only one of the two that is used in the Discussion section of the paper. In recent EIS comments and appeals we have used the latter equivalent term.

<sup>16</sup> TPA = trees per acre, and QMD = quadratic mean diameter.

<sup>17</sup> Caouette et al. (2000) refers to TimTyp classes as the "timber volume strata" from 1977 (id., p.10), and it refers to what is commonly called Vol-Strata as "revised timber volume strata" from 1997 (id., p.12). We have substituted the correct common-usage term in parenthesis.

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One way in which such non-disclosure impedes public and decision-maker understanding of the project is that: (1) timber stands likely to have above good economic value are identified from aerial photos or visually during visits to the area; (2) such stands are then likely to be included in the project unit pool, if they are in the suitable timberbase and are reasonably accessible; (3) some of the stands can be identified only by methods such as those described because the stands' economic value is not apparent from the Vol-Strata or TimTyp datasets; (4) for these high-value stands whose physical characteristics not accurately represented in the datasets, other characteristics relating to habitat quality are also understated by the dataset; (5) unless the related inaccuracies or poor resolution of the datasets are somehow compensated both regarding economic considerations and wildlife considerations, the one-side compensation that allows preferential selection of high economic value stands for logging will result in undisclosed impacts to wildlife.

NEPA requires disclosure, and at a minimum the compensations that the Forest Service makes for imperfectness of its forest datasets regarding one resource must be mirrored by compensation for related shortcomings than concern other forest resources. Otherwise the Forest Service will not be fully disclosing the known shortcomings in its data and will be making an imbalanced comparison of alternatives.

More broadly (beyond avoiding an unfair disparity in the comparison of alternatives) the Forest Service needs to assure that at the project level its datasets accurately describe the environment and allow an accurate evaluation of impacts.

Delineating canopy texture classes for comparison with and corrections to the forest character dataset (e.g. TimTyp) is essential to providing the disclosure, full and fair discussion of impacts, and accuracy of analysis that NEPA requires for this project.

### **Habitat Capability Modeling Errors Are Significant.**

1. The Kuiu DEIS relied on the DeGayner (1997) deer model, which is based on the Vol-Strata dataset. As discussed above, that dataset has no direct correlation to forest structure or habitat quality. We believe this may be especially a problem for the Kuiu project area, which has had significant wind disturbance. The result of this disturbance may be that the forestland of interest has a significant area in forest stands that score as High Vol-Strata because of a high density of relatively small trees that are not of high habitat value. To the extent this is true, the DeGayner deer model will over-estimate habitat capability and understate the loss of habitat caused by past and planned logging. We therefore believe that habitat capability modeling for this project should be done with the Suring et al. (1992) deer model, which is based on the TimTyp dataset. Caouette et al. (2000) found that the TimTyp dataset reflects differences in forest structure. Use of the Suring model instead of the DeGayner model is consistent with the opinions of wildlife scientists voiced in Ford (1995), Robertson (1995), and Hanley (1997).

GSS  
21a

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[[ We note but discount that the project's Wildlife Specialist's Report says (p.6) that Doerr et al. (2005) determined that "timber volume strata should be used in place of volume class"<sup>18</sup> in the forest-wide model,<sup>19</sup> as it seems to more effectively represent forest types chosen or used disproportionately little by deer during deep snow conditions ... We believe this conclusion of Doerr et al. (2005) is in error and that it results from peculiarities of the study area's nature and the effects of past logging there. The observations are related to the well known problem with habitat models (Kiestner & Eckhardt 1994, and the individual reviews therein) that habitat juxtaposition and accessibility must be taken into account. ]]

We request that further planning on the Kuiu project not proceed further until the Forest Service is able to replace (through a Forest Plan amendment or by other means) the use of Vol-Strata data with TimTyp data in wildlife modeling and other analysis. This request includes using the Suring deer model instead of the DeGayner deer model. If Veg-Mod is later proven superior to TimTyp for these purposes, another substitution can be made then.

2. The DEIS states (p.3-42) that habitat capability models are intended to be used to rank planning alternatives, and that they "should not be used to predict animal population numbers at some future date." Nonetheless, the DEIS does precisely what it says should not be done, by projecting deer populations on p.3-83 and stating whether or not the population will satisfy the State of Alaska's deer population objective for the WAA.

3. We note further that the deer population numbers estimated in Fig. 3-29 (p.3-83) are presented with four significant digits of precision (down to the individual deer, actually), which is far beyond the precision of the deer model that was used. All instances of such false precision should be sought out in the DEIS and corrected.

4. The DEIS attempts to defuse the issue of using the deer model for the inappropriate purpose of predicting deer populations by calling the population estimates "phantom deer" (p.3-43); however, comparing the population estimates (phantom or not) to the State of Alaska's deer population objective (as on p.3-83) is a small and unavoidable reach for the reader and the decisionmaker. Calling the estimates phantom deer does not excuse this inappropriate use of the deer model.

5. The DEIS engages in incomplete and misleading disclosure and fails to provide the NEPA-required full and fair discussion when, on p.3-44, it refers the reader to what it calls an "in-depth discussion of the reliability of habitat capability models" in DeGayner (1992). A comprehensive list of references should have been provided on the topic, and there should have been a full and fair discussion of the issue of the reliability of such models. Important references include, among others: (1) Kiestner & Eckhardt (1994); (2) many of the individual peer reviews in that reference; (3) Person (2001), especially its discussion of the problem with linearity of the deer model where there is wolf predation; (4) scientist reviews of the deer model submitted to the US Fish & Wildlife Service in 1997; (5) Person et al. (1997), Attachment 2; and (6) a selection of

<sup>18</sup> That is, TimTyp.

<sup>19</sup> The DeGayner deer model.



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GSS  
21c cont

recent EIS comments and appeals that have raised model reliability issues. (We ask that any such documents that are not already in the planning record be included.)

GSS  
21d

6. For marten, habitat capability and road density are related. The Suring et al. (1992-b) marten model documentation includes an appended graph that was intended to be used to correct the marten model's results to account for the effects of road density. DEIS Tables 3-14 and 3-15 report marten model results; however, no mention is made in the tables or the accompanying text whether a road density factor (determined from the graph) was applied. The next EIS needs to apply a road density factor, and needs to state the value that was used.

In addition, the value of the factor should be based on total road density, not the open road density. Person has noted in a number of his papers about wolves that all roads need to be considered regarding wolf trapping and hunting, and we believe the same principle applies to marten.

GSS  
21e

7. The DEIS notes (p.3-52) that habitat capability models will "probably" over-estimate wildlife populations by about 30 percent. This fact was referenced to Person et al. (1997), and although that document states (p.4) that "deer habitat capability likely overestimates the carrying capacity for deer," the DEIS needs to provide clarity on how the planning team determined the 30% figure and how it should be reflected in analysis of impacts to deer.<sup>20</sup> We ask the planning team, in preparing the next EIS, to consult the Person et al. (1997) authors on how to do this.

GSS  
21f

8. The DEIS states on p.3-52, "these models were designed to make distinctions between alternative treatments and they do this relatively well." This is true for comparing action alternatives that are somewhat similar. However in a place like Kuiu Island (where wolf predation on deer is a factor) this method of analysis may greatly under-estimate the difference between alternatives (including especially the No-Action Alternative) that are quite dissimilar (with timber volumes differing by a factor of three). This is because the deer model assumes a linear relationship between changes in habitat capability that result from loss of habitat as measured by area, while the relationship is actually non-linear. (Person 2001) (The problem with the model's assumption of linearity is discussed elsewhere in our comments.)

9. The DEIS is explicit that "the deer model assumes that an area with an HSI value of 1.0 could support 100 deer per square mile." (DEIS p.3-53) Use of this expression of the deer multiplier is a very serious error that has resulted in deer carrying capacities and populations to be over-estimated in the DEIS by about 33%. Briefly, that expression of the deer multiplier was derived in Attachment 2 of Person et al. (1997), and it was designed to apply to best quality habitat, as portrayed by an HSI of 1.0 in the Suring et al. (1992) deer model. The DeGayner (1997) model used for the DEIS portrays best quality deer habitat as having an HSI of 1.3, and therefore the deer multiplier specified in the DEIS is incorrect and should have been converted to

<sup>20</sup> Person et al. (1997) says "the actual deer population should be about 70% of K (carrying capacity)" (p.33) "to produce a net recruitment of at least 30%, a condition upon which our criteria for the minimum density of deer is based (see the detailed comments)." (p.3, with reference to the section with the former quote.) We note that the multiplicative rather than additive difference between populations at 100% and 70% of K is what is important here, and that the over-estimate caused by taking the deer model results literally is a factor of about 43%, not 30%.



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another value. See the Greenpeace et al. (2006) appeal of the Scott Peak FEIS/ROD (incorporated by reference – please add to the planning record), which suggests using a provisional deer multiplier value for use in the DeGayner (1997) deer model of 75 deer/sq-mile for that model's HSI of 1.0. The appeal also provides a detailed explanation of the error that has been made. The appeal also asks for an emergency amendment of the Forest Plan to formally adopt through interagency process an equivalent deer multiplier for the DeGayner model – a request we hereby repeat.

GSS  
21g

[[ Regarding this topic we include personal communications with David Person (who derived the deer multiplier) in Attachment 3 and ask that they be added to the planning record, along We also ask that Stangl 2005 (which misinterprets the information appended to it) and Person et al. 1997, which the Forest Service has, be added to the planning record. ]]

GSS  
21h

10. Tables 3-19, 3-20, and 3-22 (which report deer model results) need columns for the year 2045, when canopy closure will have occurred for past logging and logging from this project. The loss of higher quality deer habitat by that year is a particular concern because the deer model predicts habitat capability only for periods with average winters. Severe winters are truly the greatest concern in general, but especially for a place like Kuiu Island and major islands to its east that are known to suffer significantly when severe winters occur. Although the deer model makes no predictions for severe winters, areas of higher quality deer habitat in the project area and its WAA will be of heightened importance at such times. The EIS must do a substantial analysis of the cumulative impact of past and future habitat loss on deer, wolves and hunting in periods with one severe winter or more. Key to this is the fate of the higher quality habitat.<sup>21</sup>

GSS  
21i

11. The statement on p.3-56 that Table 3-22 gives “a general indication of how previous timber harvests have changed the area’s ability to support deer” is not true. The table shows the state of habitat capability only through 2005, but many of the logged units in the planning area were cut in the 1980s, 1990s and 2000 and that do not yet have closed canopies. (See Attachment 4, a map with logging dates for units.)

GSS  
21j

12. The changes in deer habitat capability shown in Table 3-24 and discussed on p.3-56 are based on modeling of average winters, and the DEIS should have said so explicitly. The effect regarding severe winters can be expected to be greater than shown. In addition, the habitat capabilities in Table 3-24 are overstated by about 33% because an incorrect deer multiplier value was used (see above), and in addition we note that such use of the deer model is proscribed throughout the relevant literature. Pages earlier, the DEIS called such numbers “phantom deer,” but deer scientists have frequently warned against using the model in this way, even with such a proviso.

GSS  
21k

13. Person (2001) is cited in the DEIS (p.3-52); however, the DEIS fails to disclose a critically important issue raised in that paper, much less give it the full and fair discussion NEPA requires. The issue is that where there is wolf predation on deer, the effect of deer habitat loss on the deer population is nonlinear, resulting in greater impact than can be predicted by single-

<sup>21</sup> Fig. 3-22 with 2045 data would be useful for this since, although based on an average-winter approach, it shows acreages by 12 gradations of habitat quality.

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GSS 21k cont species DeGayner deer model the project has relied upon.<sup>22</sup> Instead, it is necessary to model the deer/wolf community, using a population equilibrium model. The Forest Service has known about this problem for about a decade, and mentions the need for population equilibrium modeling in the 1998 Forest Plan Clarification of the wolf standard and guidelines. Person (2001) has provided an additional warning and a refined modeling method which could have been adapted to the Kuiu project. In past years Tongass National Forest annual monitoring reports have referred to work underway to institute such modeling, but the effort seems to have languished and to have been assigned a low priority.

We believe that planning and decision making that is based on linear wildlife analysis assumptions for an ecosystem that functions non-linearly is irresponsible and contrary to law, unless an adequate factor of safety is applied to account for the real-world situation. Exponential errors resulting from ignored non-linearity can be very serious, and the possibility of such errors must be taken into account and be avoided. The NEPA requirements for disclosure, full and fair discussion, and a hard look (and other requirements) are of heightened importance in this situation.

14. IN CONCLUSION: The DEIS' deer modeling and the analyses for deer, wolves and subsistence are wholly unreliable because they are based on: (1) The wrong dataset; (2) the wrong deer model; (3) an incorrect deer multiplier; (4) the substantial avoidance of the severe winter issue; (5) the failure to account for the deer models' ignorance of habitat juxtaposition and fragmentation; and (6) the failure to avoid or compensate for the use of a linear model in a non-linear ecosystem. These shortcomings are of particular importance because the significant amount of logging and roadbuilding the area has already experienced (see Attachment 3). A Supplemental DEIS and another round of subsistence hearings and public comment are necessary as a result.

**Partial Cutting**

1. The DEIS speculates (p.3-51) about possible benefits of partial cutting in the project, covering topics of mimicking natural wind disturbance, maintaining a diverse understory, and maintaining deer and moose use.

GSS 22a Regarding the mimicking of wind disturbance, what was not mentioned is that the area already has a high acreage of wind-disturbed forest.<sup>23</sup> Adding to this disturbance by mimicking it must be analyzed. The impact may be less than clearcutting, but it cannot be dismissed simply because it is like a natural process in some respects. Because this silvicultural system would be used where windthrow is not a threat (DEIS p.3-161), the impact will be in addition to the natural process.

GSS 22b Maintaining a diverse understory and maintaining animal use of the unit is only one element of evaluating partial cutting. What the section does not discuss is the ability of partially cut forest to intercept snow, and the effect of the change in that ability on HSI scores.

<sup>22</sup> The same problem applies to the Suring et al. (1992) model because it too is a single-species model.

<sup>23</sup> The Wildlife Specialist's Report (p.34) says, "On Kuiu Island 'as much as 30% of the forests may never reach late-seral stages because of the frequent, catastrophic wind storms'. (Bormann and Kramer 1998)."

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Deal (2001) was cited but the paper looks at partial cutting in terms of silvicultural forest structure and not habitat structure. It can be calculated from data in the paper (p.183) that after 60 years stands in the study had 12% fewer large diameter trees than originally and 10% fewer medium-large trees. However, this was for an amalgamation of a range of treatments ranging from 17 to 96% basal area removal. No definite conclusions regarding habitat can be reached from that either way with regard to this project's 50% retention in some units, but it seems there is clearly a potential to degrade the value of habitat in winter, especially over the next several decades at least.

GSS 22c { The silvicultural prescriptions for two-aged management and group selection (pp.3-164 & 165), even in combination with the unit cards, leave the reader mystified concerning how forest structure would be affected. The existing and remaining number and sizes of trees cannot be determined, even in rough terms. In addition, the cut being "approximately 50%" of basal area can exceed that take by an unknown amount.<sup>24</sup> For single-tree selection page 3-165 provides some information, but it is apparent that retaining smaller trees can allow the take of many of the large spruce and mid-sized hemlock. Again, the effect on forest structure cannot be visualized, much less the effect on winter habitat quality.

GSS 22d { Gravina Island TS IDT meeting notes for March 21, 2000 say, "The current deer model does not recognize any difference between clear cuts and partial cuts. Furthermore, feedback Jim has received from commenting agency biologists indicates they do not think partial cutting they have seen so far should be given any credit in the current deer model." (Attachment 5 of these comments.) We do not believe that Deal (2001) or the measurements by Doerr and Brainard (DEIS p.3-51) have any content that challenges that conclusion. Please request comments from interagency deer experts and provide a full and fair discussion in the next EIS.

GSS 22e { 2. The next EIS should include photos showing what such stands would look like in the worst case for winter habitat quality, from inside and out.

GSS 22f { 3. The last row of Table 3-18 should be put in a table that shows the range of HSI scores as in Table 3-22. Table 3-18 looks at all POG below 800' elevation as one lump, but the relevant analysis would be to instead show the percentage changes of the various qualities of winter habitat in that elevation range. A similar table should also be provided for the 800-1500' elevation range, which is also important habitat for deer and marten.

## **Patches, Fragmentation & Corridors**

GSS 23a { 1. Attachment 6 is a satellite photo of the project area, and we belief gives a better feel for the degree of fragmentation than the maps in the DEIS. Please provide a clear copy of such a photo in the next EIS.

GSS 23b { 2. Fragmentation of the project area and other areas to the south is already quite severe, and analyses of fragmentation, patches, and interior habitat are conspicuous in their absence in the

<sup>24</sup> The same language is found in text of Appendix-B and on the unit cards themselves.



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GSS 23b cont DEIS. In addition the discussion of corridors is insufficient. Regarding all of these topics, the DEIS should have made efforts like (but improving on) those in the Scott Peak FEIS,<sup>25</sup> and a Supplemental DEIS is necessary to provide this vital information for the Kuiu project.

- GSS 23c
3. We note from the unit cards that for every action alternative, half or more of the units close gaps between previously logged units. For one alternative this is true for two-thirds of the units. In some cases a stream buffer is left in the gap; however, reducing the existing corridor to this width may serve to increase predation. This loss of connectivity must be addressed in the body of the next EIS. We believe the subject units should be dropped from the unit pool.
4. Some of the unit cards note that habitat will be isolated. This must be discussed in the body of the EIS and needs to be accounted for in the wildlife models and various EIS tables. We believe that units that isolate habitat should be dropped from the unit pool.
5. The DEIS says (p.B-5): "Reduction of fragmentation is also an important component of maintaining deer habitat." No contemplated actions in the DEIS will reduce fragmentation, although some of them may cause less fragmentation than others.
- GSS 23d
6. The DEIS says (p.B-5), "The use of 50 percent retention of the basal area with the retention of trees of various sizes and an emphasis on snags and dying trees helps mitigate" the concern for loss of old-growth habitat. This favor one kind of habitat, but if the composition of the stand is tilted toward snags and unhealthy trees, the structural other kinds of habitat quality of the stand may be substantially lost in the foreseeable future. This may be mitigation in one sense, but in another sense may not be effective mitigation in the end.
7. The DEIS says (p.B-5), "... differing prescriptions and corridor retentions will mitigate many of these concerns for the species selected as MIS for this project." The statement is meaningless because the mitigation prescriptions have not been clearly described in functional biological terms, and their biological effects have not been discussed in a way that conveys the overall result.

### Subsistence

- GSS 24a
- On p.7 the Wildlife Specialist's Report quotes the Alaska Dept. of Fish & Game as saying of its subsistence survey that for many villages including Kake "the annual response rates ... are too low" and that this "reduce(s) our confidence in the ability of the survey to accurately describe actual deer hunting effort..." This fact needs to be included in the subsistence section of the EIS.
- GSS 24b
- Numbers in Fig. 3-29 are inflated by use of the incorrect deer multiplier.

### Unit Cards in the DEIS are Inadequate

<sup>25</sup> We do not consider these analyses in the Scott Peak FEIS to be perfect, but recognize them as a great step forward in timber sale analysis on the Tongass NF. See the Greenpeace et al. (2006) appeal of that project for improvements in these approaches that we believe are necessary.



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GSS  
25a

Scoping comments requested that unit cards show who made the unit visit for each resource, and that the brief notes be included. Unit cards do not contain the former, and the notations provided are often lacking in sufficient content.

Scoping comments also request that the character of the stand be described, including percent composition by tree species, and a description of the unit's structure and habitat. This was generally not done, and where done is insufficient.

Scoping comments asked that all units be walked by a wildlife biologist. We have no way of knowing if this was done because unit cards do not provide the information.

GSS  
25b

The public needs to know which units were visited by a wildlife biologist and the extent of the survey and its type (e.g., some past unit cards have said "windshield survey"). A few units reflect information that obviously came from the field (e.g. Unit 412), although the information could have come from anyone on the planning team rather than a biologist. Most unit cards do not contain information that clearly establishes that the unit was visited regarding particular resources, as opposed to information being filled in from an office data source. (This is not an accusation, just a statement of need for clarity.)

The unit card wildlife sections report in terms of Vol-Strata and HSI rankings that came from the deer model (which also used Vol-Strata). Field work should instead be recorded in terms of actual on-the-ground forest structure, expressed in terms of estimated TimTyp or observed characteristics. Unit cards are unclear as to whether and how much habitat data came from the GIS Vol-Strata database and how much came from field assessment.

GSS  
25c

Units with two prescriptions for one alternative (e.g. Alt-3 in Unit 109) do not explain the extent to which corridors would be blocked or to which higher elevation habitat would be isolated.

GSS  
25d

None of the unit card maps show prescriptions or yarding settings.

GSS  
25e

None of the unit cards have notations concerning buffer widths.

Many units fill gaps between existing clearcuts (sometimes with a stream buffer in the gaps). Several such unit cards do not mention whether the currently remaining forest is a wildlife corridor. Unit cards should be explicit regarding whether or not such units are in wildlife corridors or potential wildlife corridors.

GSS  
25f

On unit cards with low unit numbers, it is explicitly stated when units do not isolate habitat and do not remove corridors. Higher numbered unit cards are not explicit in this way, and should be updated with that information.

With near consistency, unit cards misstate medium HSI deer habitat as having an HSI of "4.0 to 5.0." The HSI scale does not go nearly that high, and this error calls into question who filled out the wildlife sections of the unit cards and how the information was obtained.

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GSS  
25f cont

Language regarding fate of corridors is inconsistent, and the meanings of the terms used are not explained. Language includes that effects on a corridor would be "mitigated" (e.g. Unit 109) or that the corridor would be "maintained" (e.g. Unit 112), "reduced" (e.g. Unit 109-B) or "retained" (e.g. Unit 417), or that the prescription would "help retain" the corridor (e.g. Unit 414). In some cases where some such language seems to fit the situation it is absent (e.g. Unit 209 for Alternatives 2, 3 and 4). Consistent terms should be used to the extent possible, and all terms should be defined in the unit card appendix.

Language like "harvest would not isolate habitat and corridors" occurs on several cards, and is ambiguous concerning corridors. It is unlikely that isolation of corridors is what is meant. (e.g. Unit 209)

Unit card 412 says "area is not an isolated corridor." What does this mean? Is the area being used as a corridor?

**Many Information Requests Made During Scoping Were Ignored**

GSS  
26a

The willingness of the Forest Service to provide documents from the Kuiu Timber Sale Area planning record has proven unsatisfactory. Our efforts began early and were repeated often, but what minor fragments of the record that we were able to obtain came very late in the process. As one example the Wildlife Specialist Report, a key document for our review of the DEIS, was not made available until the night of Saturday March 18, two nights before the comment deadline.

The team leader had claimed that the document was too large to e-mail; however, after obtaining it from a Forest Service FTP site, we found that this was not true because the document was less than 2 mb in size. In fact, this was the first document provided on the ftp site despite earlier requests to post planning record documents there, and it was posted only after we made a firm request that Saturday for an extension of the comment deadline because important planning record documents were unavailable.

GSS  
26b

Scoping comments asked that Vol-Strata not be used for wildlife analysis. The request was not disclosed and the issue was not fully and fairly discussed in the DEIS.

GSS  
26c

Scoping comments asked that several documents be included in the planning record and be considered. Some were included, but the two joint statement letters concerning the Forest Plan from peer review scientists who participated in Kiester & Eckhardt (1994) are not in the planning record index. We ask again that they be included – contact us if you cannot find copies.

GSS  
26d

Scoping comments asked for detailed analysis of fragmentation, habitat patches, and wildlife corridors. Analysis of such topics is missing or incomplete in the DEIS.

GSS  
26e

Scoping comments asked that criticisms of wildlife models be thoroughly discussed in the DEIS. This was not done, nor was the request disclosed.

**Micro-management of Project-Level Analysis**

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GSS  
27

We include in Attachment 7 an e-mail from Tongass Wildlife biologist Steve Fadden regarding wildlife analysis in another timber project. (Fadden 2005) Although it is specific to another project, it has broad implications for timber projects Forest-wide and for this project in particular because the recipient has been assigned to this project. We believe the policy described is in conflict with the flexibility needed at the project-level to comply with NEPA and is otherwise improper. Please add the e-mail to the planning record.

**The DEIS Confuses the Public and Decision-makers By Manipulating of Scales of Measurement**

GSS  
28

The DEIS seems to do its analysis based on WAA, VCU, and project area depending on what provides the most positive outlook for the agency. Sometimes it is unclear even what scale of analysis is being used. For example, in the project summary it is unclear if the road density provided is for the entire island, the smaller project area, the WAA or something else. The same confusion exists in the numbers presented for wildlife habitat and subsistence in the summary and throughout the DEIS. For example the DEIS 3-39 presents information related to loss of POG it; however it does not explain what scale this analysis is based on.

It is also unclear if the miles of existing roads reported in the DEIS includes road that delineate the project area boundary. Road densities should be presented at the project level scale and must include roads delineating the project boundary as well as all temporary or closed roads as these roads continue to provide hunters and trappers with access to the project area.

**The DEIS Does Not Adequately Analyze Loss of Biodiversity**

GSS  
29

As explained above the DEIS provides some basic numbers related to loss of POG habitat; however it does not explain what scale this analysis is based on. Further, the DEIS claims that historic information related to how much high volume POG has been harvested to date is not available (DEIS 3-40). We do not see how this is possible as one simply would only need to visit the previously harvested sites and measure stumps to get an approximation of what the forest structure looked like prior to harvest. Lastly, the DEIS is devoid of an actually hard-look analysis to explain what the impacts of the loss of more than 51% of coarse canopy old growth to date has had on the area and how this and other timber projects in the future will cumulatively have on biodiversity in the project area, on Kuiu Island and across the Tongass.

**Emphasis on Clearcut logging as a Harvest Method**

The National Forest Management Act imposes significant restrictions on the use of clearcutting in the national forests and, in particular, prohibits the Forest Service from selecting a logging method primarily because it will provide the greatest financial return or output of timber. 16 U.S.C. § 1604(g) (3) (E) (IV); 36 C.F.R. § 219.27(b) (3). The proposed alternative 4 of the Kuiu project will clearcut 1,168 of the total 1,425 acres (82%) of all timber to be logged. While a small portion of the harvest prescriptions are clearcut with reserves, we have found in many cases it appears that the FS simply extends the "unit boundary" beyond the edge of the planned clear-cut into surrounding old growth, and labels the addition a "reserve". The "reserves" that are often set



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aside in the "clearcut with reserves" prescription are areas that are "unsuitable" for logging anyway due to topographic elements or oversteepened slopes.

GSS  
30

Further, given the heavy emphasis on clearcut logging as a harvest method we find it shocking that the DEIS continually points to "using timber harvest treatments other than traditional clearcutting" as a way to minimize impacts on wildlife and other resources (DEIS 3-67). For example, the Wildlife Specialist's Report in discussing alternative 4, states, "Deer, marten, wolf and bear are unlikely be adversely affected by this alternative since applied harvest prescriptions will result in a **large number of uneven aged stands** which should help maintain a natural forest mosaic" (Emphasis added). The report goes on to state, "The amount of habitat fragmentation occurring through the implementation of this alternative will be reduced using uneven-aged prescriptions." We do not see how 18% of the managed stands constitutes a "large number" or how uneven-aged management on 257 acres of a total 1,425 acres can be considered "significant" and used as the basis to support the agency's findings in this case.

### **The DEIS fails to Include Heron or Raptor Surveys Results For This Project as Required**

GSS  
31

TLMP requires project level inventories be conducted to identify heron rookeries and raptor nesting habitat using the most recent inventory protocols. (TLMP 4-116) (Emphasis added) We see no evidence in the DEIS or in the planning records we possess to date that indicate surveys for herons or raptors (outside the Queen Charlotte goshawk ) have been performed as required by law for this project. Survey forms and details for goshawks are missing from the planning record index we were provided upon request, despite the fact that the Agency makes claim that such surveys were performed. For the USFS to meet the clear standard of TLMP it must survey for all raptors, including owls. Owls are clearly intended beneficiaries of the S&G as they specifically are mentioned. Effective owl surveys intent on finding nest sites must be done between March and late April with the optimal survey time between April 1 & 15. Owls that respond to vocalization calls in late spring or summer, when Goshawk surveys are typically performed, are non-breeders; hence it will not be possible to locate nests. For this reason surveys for all raptors cannot be conducted incidental to goshawk surveys. The Forest Service must conduct project level inventories for herons and all raptors in the project area, as explicitly required by TLMP.

### **The DEIS Fails to Adequately Identify Impacts to Wolf Populations**

TLMP requires a 1200' forested buffer around wolf dens and prevents road construction within 600 feet of dens. (TLMP 4-117). It is implicit in the requirement of TLMP to protect wolf dens, that in order to do so, the dens must first be located. We have seen no records to indicate that surveys for wolf dens have been completed in the project area, however numerous documents in the Administrative record lead to a likely assumption that wolves do indeed den within the Kuiu Project area.



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GSS  
32a

The unit card for unit 208 states that a wolf den exists within the unit but that it is inactive. We request the entire unit be surveyed each year to insure the den is not again in use. Unit 104 also has documented wolf activity and what may be a den site. Given that the agency is unsure at this time whether the site is an active denning area, we request this unit be dropped from any further consideration.

We are also very concerned about the impacts this project will have on deer, which in turn will impact the wolf population, as deer are wolves' primary prey. Due to a heavy snowfall, the deer population on Kuiu Island crashed in the 1970's. The population has increased to a level where harvest has again been allowed, but remains well below the recommended population to sustain wolves. Logging and road construction associated with the Kuiu project will decrease suitable deer habitat in the long-term and increase hunter access. The design of the Kuiu project will also create leave-strips between clearcut stands. These areas may serve as magnets for deer in heavy winter snow months, making them easy prey for wolves. The overall result is that the Kuiu Project will cause increased pressure on an already low deer population.

GSS  
32b

As the ADF&G noted in their scoping comments on this project, "If subsequent entries continue to target the highest value deer winter range, the impacts to deer and wolves may be amplified as a result of cumulative impacts. Any additional habitat alteration as a result of timber harvest and road building will further erode the carrying capacity for deer and wolves at both the project and biogeographic levels". (ADF&G Scoping Comments, April 2004) These concerns seem to have been dismissed in the DEIS with little to no discussion.

Further, we are very concerned about high road densities shown to have a negative impact on wolf populations in southeast Alaska. This project will further add 19 new miles of road and reconstruct many others to an already heavily roaded area. Road densities on the northern portion of Kuiu currently exceed the established guidelines for wolf mortality in the TLMP. The DEIS reports within the project Area road densities are at 0.78 mile per square mile. We are confused about this number as the ADF&G in the scoping comments on this project (April 2004) calculated the road density for the project area at 1.68 mile per square mile. We are assuming the Forest Service calculation has excluded all temporary and closed roads as well as the project boundary roads.

GSS  
32c

The DEIS seems to be using Dave Person's work to assume wolf mortality may increase substantially when open-road density exceeds 0.7 mile of road per square mile. The DEIS finds because all action alternatives seek to reduce overall road densities below 0.7 miles there is no problem. However, Person recommends that the Forest Service should calculate road density based on **all** roads, not open roads. Closed" roads still allow easy walking or motorized access, and many water-barred roads don't effectively prevent access by ATVs. Another point the DEIS is overlooking is that the Wolf conservation assessment is based on a road density value of 0.66 (~0.7) on all land *below 1200 feet*, because few roads are built above 1,200 feet, and wolves spend most time below that elevation. With respect to its effects on wolf mortality, road density should not be tabulated based on all land within the project area, but rather on lands below 1,200 feet in elevation. We request the road density analysis be redone considering these important factors.

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**The DEIS Fails to Adequately Identify Impacts to Black Bear Populations**

As the Wildlife Specialist's report for this project notes-black bears are sensitive to human disturbance. Elizabeth Peacock PhD has been studying the black bear population on Kuiu Island for some time now. Ms Peacock and others have expressed concern about timber harvest and its effects on the black bear population on Kuiu Island (Kuiu Wildlife Specialist's Report Dec. 2005). The high road density on northern Kuiu Island also gives us great concern for the island's black bear population. As ADF&G noted on their scoping comments on this project, "The recent expansion in the use of road-based transportation by guided and outfitted black bear hunters has been of great concern to ADF&G wildlife managers charged with ensuring the long-term sustainability of Kuiu's black bear populations."

GSS  
33a

Despite the clear concern of one of the leading experts on the Kuiu bear population, the ADF&G, outfitters and guides and many others, the DEIS does little to no analysis of how this project may impact the black bear population on Kuiu Island instead it makes broad brushed, unsupported dismissal over such claims. The agency again appears to be relying on the benefits from partial harvest as adequate to protect this species. Given this is less than 20% of the harvest prescription in the proposed alternative we find this reasoning indefensible. Further, reliance on future road closures as a way to protect this species is uncertain as best as such closures have not been proven affective elsewhere across the forest.

GSS  
33b

Lastly, the DEIS does a poor job of explaining how black bear hunters (as well as hunting guides and outfitters) may be impacted from this project. For example, how will habitat loss, noise from logging operations, the presence of a logging camp etc impact hunting over the short and long-term.

**The DEIS Fails to Adequately Identify Impacts to Marbled Murrelet Populations**

GSS  
34

TLMP requires a 600-foot circular buffer of undisturbed forest surrounding marbled murrelet nests. (TLMP 4-117). Because the Forest Plan provides specific direction to protect such areas, it is implicit that to do so one must first survey for nests. Without conducting site-specific project inventories, it is impossible to locate, and therefore protect habitat for the murrelet as TLMP intended. The planning record for the Kuiu project does not disclose any attempt by the Forest Service to locate nests. The agency must conduct specific inventories to locate marbled murrelet nests in the project area and this information must be made available in an SEIS.

**The DEIS Fails to Adequately Disclose Impacts to Marten and Fails to Consider New Information as Required by Law.**

Marten are native to Kuiu Island. This species is well documented as preferring old growth forests below 1500 feet in elevation. The quality and quantity of such habitat is the limiting factor for winter survival for the marten. Density of roads affects the quality of habitat for marten, and increases their vulnerability to over harvest. A habitat capability model used to evaluate marten habitat on the Tongass National Forest predicts declines in marten densities at road densities as low as 0.2 miles per square mile, and population declines of 90 percent where road densities

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approach 0.6 miles per square mile. Many of the watersheds within this project area already exceed this road density.

The planning record shows a concern expressed by ADF&G biologist Rich Lowell about low numbers of marten on Kuiu Island (See Kuiu PR 217). However, the DEIS brushes off any concerns about marten by claiming the TLMP will mitigate any impacts.

Further, the Wildlife Specialist's Report for this project shows clear concerns for low populations of marten in this area:

From the September 2001 to December 2003, Rod Flynn and Tom Schumacher, of the Alaska Department of Fish and Game, studied marten abundance and prey abundance on the old growth reserve system prescribed by the Forest Plan on eight study sites including Northern Kuiu Island. They trapped along the road system and found that marten populations were very low.

is concern is not reflected in the DEIS.

As discussed above the Forest Plan marten model was used to predict marten habitat capability. This model is not adequate to assess impacts to marten as it fails to account for predator densities, prey density, winter severity, and trapping pressure.

The DEIS also erroneously rely upon the TLMP to protect marten viability and fail to include new critical information from the scientific literature regarding this species. Five years after the TLMP was adopted it is clear that several assumptions made in designing TLMP in terms of marten viability are either unsupported or just plain wrong (Robertson et al 2000). (These assumptions include the following:

- TLMP assumes that openings smaller than 2 acres will have no adverse effect on martens if openings occupy < 25% of a stand-this has not been tested.
- TLMP's assumption that leave trees in partially harvested units should be evenly distributed rather than clumped, while speculative insights suggest that clumping leave trees may be better for marten habitat
- No evidence exists in regard to the appropriate width of habitat corridors for dispersal
- No literature exists in regard to the rate of population exchange that must occur between reserves to maintain metapopulation function
- TLMP assumed that large reserves would support 25 adult female martens; however, a study on Chichagof Island indicated that a large reserve of minimal size (40,000 acres) will not support this number of martens during years of low prey abundance, and may not support 25 adult female martens during years of high prey abundance.
- Due to the heterogeneous nature of the forest in southeast Alaska, it has not been possible to differentiate demographic factors – productivity, survival and population density – between high volume and medium volume timber strata, nor between uplands and riparian areas.

GSS  
35



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Further, male marten home ranges have been documented to be as large as 4,718.46 acres w/ median size of 1,358.7 acres. (Flynn 1994) This is 2.7 to 13.59 times larger than the 100-500 acres listed as utilized by the TLMP Marten table (L5). Additionally, it may be inaccurate to assume that 200-year-old stands provide sufficient habitat for marten (Alaback 1982a and 1982b, Schumacher 1999). Two hundred-year-old stands may lack the large woody structures and structural complexity near the ground that martens use for denning and resting, and they may lack undergrowth sufficient to support small mammal populations.

Rather than disclose or analyze any of this information, the DEIS relies on the TLMP as adequate to protect this species. TLMP mitigation measures included in the project cannot be relied upon to be effective for the above reasons and because marten viability is guaranteed only by large, unfragmented areas of high volume old growth that is not easily accessible to legal and illegal trapping. We specifically request should planning continue on this project that this information be discussed in the FEIS.

**The DEIS Fails to Adequately Analyze The Loss of Wildlife Corridors and Connectivity**

TLMP S&Gs related to wildlife specifically call for landscape assessment of “old growth forest habitat within large and medium reserves and other natural [LUDs] and then determine whether forest connectivity exists among old-growth blocks in large and medium reserves and natural setting LUDs” (1997 TLMP at 4-12). We could find no evidence of such a review having been performed in the planning record. Among the areas that are especially important for wildlife travel in this heavily fragmented landscape are the existing leave strips between bands of clearcuts and areas of high value winter range such as Rowan Peak and other south-facing, low elevation slopes. However, when we look at the alternative maps provided in the DEIS it is apparent that many of the units slated for harvest will remove these in-between cut areas creating giant “mega-cuts”. These mega-cuts create relatively large areas devoid of old growth forest. The DEIS analysis fails to look at the impacts of these megacuts will have on wildlife.

Further, the DEIS is relying on connectivity to be provided by riparian areas, mountain passes, and beach fringe, yet much of the previous harvest, which took place prior to the Tongass Timber Reform Act, significantly impacted riparian areas, rendering them ineffective as travel corridors.

We are concerned that important wildlife corridors will be lost and connectivity will be severed if the preferred alternative is implemented. From the DEIS and the planning record it is clear that at a minimum the following units have evidence of serving as important wildlife corridors: 101, 102, 112, 206, 207, 209a, 209b, 301 401, 404, 405, 408, 414, 415, 418, 503. We request should any further planning occur on this project these units be dropped from consideration.

**The DEIS Fails to Identify Impacts to Small Endemic Mammals**

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The Forest Plan specifically recognizes that the loss of unique species on the island system of the Tongass is an issue of concern. Under the TLMP, the Forest Service is required to evaluate the existence of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges. A number of endemic species have been documented on Kuiu island to date, yet the DEIS is devoid of any mention of the existence of such species or the impacts of this project on their long-term survival. In fact the only small mammal the DEIS even mentions is the red squirrel. However, the document quickly dismisses the need to present any analysis on impacts to this species by making a blanket unsupported statement that there is no concern with red squirrel habitat (DEIS 3-43). We find the lack of discussion of endemic mammals quite ironic given one of the stated purpose and needs behind this project is to “provide for current and future habitat needs of endemic wildlife species” (DEIS S-2).

GSS  
37

It is our understanding that Natalie Dawson, a graduate student working with small mammal expert Joseph Cook, is currently studying endemic small mammals on Kuiu Island. We believe between Mr. Cook and Ms. Dawson adequate information exists to discuss what small endemic mammals are present on the island. Please provide this information and analysis of the impacts from this project and other past and future harvest planned for the northern part of Kuiu Island on these species.

### The DEIS Does Not Adequately Address Effectiveness of Road Closures

Though all new roads proposed for this project are slated to be closed, they will connect with the many miles of existing roads on the island. The DEIS does not address how the Forest Service will prevent non-motorized access to local resources, enforce motorized access restrictions and access violations, or how the agency proposes to exclude traffic from roads during the project operating years

GSS  
38

The DEIS fails to discuss the method(s) that will be used to decommission or close the new temporary roads as well as the reconstructed roads built in association with this project. Particularly, how will the agency ensure that they no longer provide motorized human access when other similar efforts across the forest have failed. We found little to no mention of the use of off-highway vehicles on the road system on Kuiu or within the project area, yet we understand this is a popular way for people to access the interior of the island. This is an important consideration when discussing road closure effectiveness and hunting impacts. Further, the DEIS fails to discuss use of the roads by foot traffic- a use that is likely to continue some time after the roads have been closed.

Given that Kuiu Project area already has an extensive road network, we seriously question how the Forest Service can meet TLMP’s goals and objectives by building new roads. The DEIS fails to clearly identify the adverse long-term effects of retaining roads at the project’s close, and how likely existing and proposed roads are to be maintained to protect water quality and aquatic resources in and around the project area. The bulk of the DEIS’ road management section contains generalized information about the road classification system and Forest-wide access management goals. When roads and stream crossings are discussed in other sections (such as Fisheries Resources), the information is quantitative and summary in nature, without providing

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GSS 38 cont. any specific information about the potential impacts on the human environment. The Forest Service must provide detailed analysis of the impacts of roads on the human environment.

**Discussion of Management Indicator Species is Grossly Inadequate**

GSS 39 Management Indicator Species (MIS) are vertebrate or invertebrate species whose population changes are believed to indicate some effects of land management activities. MIS species are selected because their population changes are believed to indicate the effects of management activities (36 CFR 219.9 (a)(1)). The discussion of MIS in the Kuiu DEIS is grossly inadequate. No mentions of the Vancouver Canada goose or the Red-breasted sapsucker are made at all. Further, the Red squirrel, River otter, Bald eagle, Hairy woodpecker and Brown creeper are blatantly dismissed because of TLMP protections, difficulty in monitoring and the potential that these species may be dropped as MIS in the future. This misses the intent of selecting these species as MIS in the first place and fails to meet the "hard look" standard required by the National Environmental Policy Act.

**The DEIS Contains Inadequate Information on Sensitive Plants**

GSS 40 It appears that sensitive plants surveys were focused only on the timber units- not the temporary and reconstructed roads. Further only 24 units were surveyed- a small percentage of the total unit pool. We suggest further sensitive plant studies be performed in all units and along all proposed roads,

**The DEIS Fail to Adequately Analyze Impacts of Logging in a Recreation River LUD**

GSS 41 We strongly object to inclusion of 1,246 acres of recreational river LUD within the project area and specifically to the timber harvest and road construction within the Kadake River Corridor. This area was set aside in the TLMP to maintain its eligibility status for Wild and Scenic River designation. We strongly believe timber harvest in this area is inconsistent with the goal of preserving the Wild and Scenic River eligibility, as well as being inconsistent with recreational uses and the visual quality objectives for this area.

**Information on Small Old Growth Reserves Is Inconsistent**

GSS 42 We are confused about an inconsistency related to the small old growth for VCU 398. The numbers presented in table 3-7 of the DEIS (pg 3-30) do not match numbers presented for this same VCU in the old growth reserve review in the planning record dated 12/ 20/2005 (P.R. 001). In particular deer and marten habitat numbers do not match nor do the volume strata and acres at various elevations. Please explain this inconsistency. Further, we urge should this project move forward that the biologically preferred interagency old growth reserve be selected. We would like to point out the recently completed Kuiu Island Landscape Assessment specifically recommended that interagency changes to old growth habitat reserves be implemented.



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**The DEIS Fails to Adequately Analyze Impacts to Watersheds**

We are very disturbed to see the Kuiu Project seeking to enter watersheds which have had significant past harvest and road construction. This high level of timber harvest has caused significant fragmentation of old growth habitat in a relatively short period of time. Two watersheds within the project area have a 20% or greater cumulative harvest level over the past 30 years and one watershed, Dean Creek, has a 31% harvest to date. According to the DEIS these areas have “a high potential for changes in stream channel condition if sediment load increase[s]” (DEIS 3-113).

GSS  
43a

TLMP recommends “[a] more intensive, complex, and field-based watershed analysis” for watersheds with 20% or more of the acres clearcut within in the past 30 years. TLMP also directs planners to use the basic framework for watershed analysis contained in the “Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis” (August 1995). The Watershed Assessment Resource Report prepared by Kuiu DEIS, however, falls short of these TLMP requirements. The report merely contains generalized information and unverified data. This is inadequate to comply with TLMP or NEPA. See 40 CFR 1502.24. The cursory analysis in the report fail to address fully the core topics for analysis contained in the Federal Guide, including erosion processes and wind disturbance regimes, watershed hydrology, stream channel morphology and water quality.

GSS  
43b

The sediment risk index (SRI) for the Kadake Creek, Rowan Creek and WS #109-44-10370 are ranked as “very high”. Two additional watersheds, Saginaw Creek and Security Creek, have “high” SRI rankings. Despite the Rowan Creek watershed ranking with a “very high” SRI no detailed field based assessment of stream channel conditions were done for this Creek (DEIS 3-122). The Agency claims that is because this watershed falls under the 20% cumulative harvest levels. Given the high risk of modifications to this watershed, we request that a detailed field assessment for this watershed be conducted.

GSS  
43c

Lastly, given the significant habitat modification within several of the watersheds in the Kuiu project area and the high risk of increased sediment loads from this project we find the brief cumulative impact analysis presented on this topic grossly inadequate.

**The DEIS Fails to Take A Hard Look At Cumulative Impacts**

GSS  
44a

Nowhere in the DEIS does the Forest Service take a hard look at the effects from past logging to forest resources on Kuiu Island and the users of those resources. Given the extent of logging and road building throughout the northern portion of the island, the Kuiu Project must also be evaluated in its impacts to regional habitat contiguity, availability of subsistence resources, forest-wide species diversity, and other large-scale concerns. Without such an analysis, the DEIS violates NEPA.

The DEIS sections on cumulative impacts are mostly cursory in nature, stating that TLMP standards and guidelines, monitoring and mitigation will redress cumulative impacts.

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Alternatively, some sections contend that not enough information is known to evaluate cumulative effects.

GSS  
44b

Lastly, the Forest Service has plans for the Bayport timber sale also within the same VCUs as the Kuiu Project Area in the near future. Due to the large overlap of these timber sales, we are confused as to why they have not been viewed as a single action. In fact the DEIS seems to dismiss this project as outside the Kuiu Project area. This is counter to the recent timber planning schedule released by the agency which shows the Bayport project in VCUs 398, 399, 400 among others. Please explain why these two projects are not being considered as a single action. Lastly, the recently completed Kuiu Landscape Assessment also mentions the Alecks Timber Sale. We saw no discussion of this project in the cumulative impacts section.

**Conclusion:**

GSS  
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For the aforementioned reasons we strongly urge the no further planning occur on the Kuiu project. Should such planning move forward we urge the following units that have been identified as high resource risks and/ or as having importance for wildlife corridors or connectivity value (as identified in the DEIS and planning record) be removed from any further consideration: 101, 102, 106, 109b, 110, 112, 206, 207, 208, 209a, 209b, 211, 212, 301, 401, 404, 405, 408, 410, 412, 413, 414, 418, 415, 418, 419 and 503.

Thank you for the opportunity to comment on this project.

Sincerely,

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## **GSS - 1a and 1b**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

Forest plans are programmatic documents that guide future projects. The decisions to be made in a forest plan involve whether and how to change existing management direction. The status quo for a forest plan decision is the pre-existing management direction, not a complete cessation of all management activities. It would be counterproductive to sustainable management if all activities were shut down during the periodic amendments and revisions of forest plans.

In NFMA, Congress directed that forest management continue under existing plans while the first NFMA forest plans were being developed [16 U.S.C. 1604(c)]. Likewise, under NEPA, the Council on Environmental Quality has recognized that the “no action” alternative for forest plans is the current management direction, not a halt of all activities [CEQ’s “40 Questions” #3]. Even if the Kuiu project is completed, the Project Area is still eligible to be designated as any of the land use designations, as harvested lands are included in reserve land use allocations.

## **GSS – 1c**

The entire Tongass was evaluated and reviewed for possible Wilderness recommendation in the 2003 TLMP SEIS. All Tongass National Forest lands were assessed to determine if they were suitable for wilderness consideration based on the Wilderness Act and procedures in the Forest Service’s forest planning directives. Appendix C (TLMP SEIS Volumes II and III) includes documentation of the analysis and evaluation for each inventoried roadless area, and describes the relative contribution each roadless area would make to the National Wilderness Preservation System. The SEIS documents the results of a very intensive additional roadless area evaluation for the Tongass conducted in 2002 and 2003. This included updated mapping and evaluation of all unroaded lands, which led to the 109 inventoried roadless areas analyzed in the Final SEIS. The Kuiu roadless areas were evaluated and not recommended for Wilderness.

The current revised Forest Plan allows for the activities in Kuiu to take place. Delaying planning and analysis regarding road building and timber harvest, even for a short time period, have a significant effect on the amount of timber available for sale in the next year, due to the time needed for sale preparation, appraisal and advertisement, and to provide for the time period when sale areas are typically inaccessible (winter months).

# Response to GSS

The settlement agreement for *Natural Resources Defense Council v. U.S. Forest Service*, Case No. 1: 03-cv-0029-JKS signed by both parties in April 2007, has been approved by the District Court on May 23, 2007. As part of this settlement agreement, the Forest Service will not sign new RODs or other decision documents for timber sales in Inventoried Roadless Areas or on Kuiu Island. For purposes of this agreement, the Forest Service will not take this and other actions described below until 30 days after publication of the notice of availability of the FEIS for the Tongass Forest Plan amendment in the Federal Register, unless the Forest Service designates a later effective date for the new plan, in which case the Forest Service will not take these actions until the effective date designated by the Forest Service.

## **GSS - 2**

The EPA has rated the DEIS for Kuiu Timber Sale as Environmental Concerns- EC-1 consistent with EPA's rating system (see the EPA letter earlier in this Appendix).

Turbidity monitoring, as described in the 2004 Annual Monitoring and Evaluation Report, included consultation with the Alaska Department of Environmental Conservation according to the memorandum of agreement between the agencies. The preliminary data and analysis, coupled with observations of appropriate BMP implementation on site, provide assurance of compliance with Alaska Water Quality Standards for turbidity. There were no violations of state water quality standards for turbidity issued by the State.

The Forest Plan Monitoring and Evaluation Plan does not require the collection of sediment data. The Forest Plan Monitoring and Evaluation Plan, and the Kuiu DEIS (see p. 2-22 to 23) emphasize monitoring to ensure that BMPs are implemented as planned. The Forest Service's implementation and monitoring of BMPs satisfies the requirements of the Alaska Non-point Source Pollution Control Strategy and is approved by the U.S. EPA, thereby ensuring that USFS activities are consistent with the Clean Water Act. No violations of the water quality standards for sediment are expected to occur as a result of the Kuiu Timber Sale project.

## **GSS - 3a**

The Forest Plan (p. 4-96) says to use clearcutting where such a practice is determined to be the best system to meet the objectives and requirements of the Land Use Designation (LUD). Even-aged management, clearcutting, in the Timber Production LUD is a way to increase the commercial timber productivity of the site. As stated in the DEIS, (p.1-6) the Timber Production LUD is managed for the production of saw timber and other wood products. Pages 3-160 and 3-161 of the DEIS describe the reasons for using even-aged management.

These lands are in a Timber Production LUD and an objective of this LUD is to increase the commercial timber productivity. It is for this reason that the removal of stands with dwarf mistletoe and wood decay fungi through even-aged management, to improve forest health and commercial productivity, is a valid consideration.



### **GSS - 3b**

Refer to GSS-3a for the objectives of Timber Production LUDs. The differences between clearcut logging and windthrow openings is discussed in the DEIS (p. 3-25).

### **GSS - 3c**

The reasons to clearcut are explained in the Timber and Vegetation Resources section in Chapter 3 of the FEIS, in the above responses and in the Timber and Vegetation resource report.

### **GSS - 4a – 4e**

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

### **GSS - 5a**

The DEIS findings (p. 3-95) for the potential foreseeable effects from the action alternatives in the Kuiu Timber Sale Area are not expected to result in a significant restriction of subsistence uses. The Forest Plan Record of Decision (p. 36) concluded that the potential cumulative effects of implementation of the Plan could lead to a significant possibility of a significant restriction to subsistence use of deer in some areas at some time in the future due to the potential effects of projects on the abundance and distribution of these resources, and on competition for these resources. The competition was based on an 18 percent increase in community population growth for each of the first two decades and a 15 percent increase for each of the next three decades (FEIS Part 2, p. 3-528 and DEIS p. 3-96). An 18% population growth has not occurred, yet.

See reply GSS - 4a - e for a response about the market demand calculations and TTRA directions.

The Forest Plan identifies all areas as open for subsistence uses and it would be difficult to identify an area that is “less sensitive to logging.” Logging creates environmental effects to resources; while logging in a specific area may reduce effects for one resource it may increase effects to another resource. Examples follow:

When logging is planned on another island it may not affect Kake subsistence hunters but it would affect other subsistence users.

When logging is planned in an area that has no prior logging many of the effects are diluted over the area and cumulative effects would be small, but this approach is not embraced by the general public because of the costs of road building and the potential fragmentation of old-growth patches.

When logging occurs in an area that is already logged, such as the Kuiu Timber Sale area, the cumulative effects are compounded by past actions, fragmented forests are further fragmented, old-growth patches are further reduced in size, and wildlife travel corridors may be reduced or removed. However, analysis of the subsistence resources does not show a significant possibility of a significant restriction of subsistence resources, now or in the future.

### **GSS - 5b**

See reply GSS - 4a-e and 5a

# Response to GSS

## **GSS - 5c**

The DEIS findings (p. 3-95) for the potential foreseeable effects from the action alternatives in the Kuiu Timber Sale Area are not expected to result in a significant possibility of a significant restriction of subsistence uses. See reply GSS - 5a.

## **GSS - 6**

See reply GSS-7, GSS-9a and GSS-11.

No “pre-roading” has been done for the Kuiu Timber Sale. Maintenance and reconditioning of existing National Forest System (NFS) roads is an ongoing process that occurs on a periodic basis. Normally this kind of road work is determined to fit the category of routine repair and maintenance of roads that do not individually or cumulatively have a significant effect on the quality of the human environment and may be categorically excluded from documentation in an EIS or an EA unless scoping indicates extraordinary circumstances (FSH 1909.15, 31.12, #4). The maintenance and reconditioning of NFS roads on the project area may occur before, during and after the project analysis. This work is done through separate service contracts to reduce the backlog of deferred maintenance, recondition roads to comply with best management practices, maintain the existing infrastructure for the proposed timber sale or future harvest entries, and other National Forest management activities. The timing of this work may coincide with this project's analysis but is not part of the proposed action or alternatives being considered. See GSS-9a for further discussion.

## **GSS - 7**

NEPA requires the disclosure of effects on the human environment, not the administrative costs of managing timber sale projects. Unlike socio-economic impacts considered in the Kuiu FEIS, administrative costs do not have impacts on the larger public the way the jobs created by timber sales do. Administrative costs play no part in the economic justification of the project. They are administrative costs, not economic benefits of the project.

Even though NEPA does not require it, the administrative costs associated with implementing the Kuiu Timber Sale Area project are addressed. The Kuiu Timber Sale Area DEIS uses the average costs across the Alaska Region for administering timber sales (DEIS, pp. 3-107 - 3-108). These costs are based on calculations outlined in the Declaration of Forrest Cole (Decision Document #838). The Forest Service must use estimates of costs and revenues for timber sales in project NEPA documents as the actual costs and revenues will not be finally determined until the sales are sold.

## **GSS – 8a**

The costs displayed in the comments include total expenditures by the Forest Service in various categories, derived from tables of expenditures by budget line item (BLI) from Tongass National Forest monitoring reports, 1998-2003. Although total expenditures by BLI include on-the-ground costs of timber sale planning, sale preparation, engineering support, and sale administration, timber sale costs to the Forest Service constitute only a portion of the various BLI totals. The expenditures in a BLI are the expenditures for the

entire National Forest in a given category in a given year, and cannot be attributed to specific projects. As outlined in the Declaration of Forrest Cole lodged with the District Court in *NRDC v. Forest Service*, (Case No. J04-010CV (JKS) Decision Document #838), the timber sale process is a multiple year process and there is no expectation that expenditures and actual harvest will occur in the same year.

The Forest Service is not mandated to make money by offering timber for sale. The Timber program is not unusual in costing more to operate than the government receives in revenues from the program. Many programs on the Tongass NF generated no revenue, including the subsistence, heritage, inventory and monitoring, land management planning, geology, fish and wildlife management, trail improvements, and fire protection programs.

The Forest Service is directed to sell commercial timber sales at not less than appraised rates. The Alaska Region implements this direction by established appraisal methodologies. Forest Service administrative costs play no part in the calculation of appraised value.

NEPA requires the disclosure of effects on the human environment, not the administrative costs of managing timber sale projects. Unlike socio-economic impacts considered in the Kuiu FEIS, administrative costs do not have impacts on the larger public the way the jobs created by timber sales do. Administrative costs play no part in the economic justification of the project. They are administrative costs, not economic benefits of the project.

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### **GSS - 8b**

See reply GSS - 4a-e

### **GSS - 9a**

The Forest Service receives annual road maintenance monies to be used for maintenance of the road systems for the present and perceived problem areas of the road system. Petersburg Ranger District is composed of several island road systems and the annual maintenance monies are generally divided between these island systems. As with Kuiu Island road system, the maintenance monies were allocated toward the mainline roads that receive the most usage. Forest Roads 6402, 6448, 6404, and 6415 are maintenance level 2 and 3 roads as delineated in the Tongass National Forest Forest-Level Roads Analysis Table D1 and the Kuiu Landscape Assessment Appendix A Tables E and F. It is the Forest Service's responsibility to keep roads open for public use, maintained for



## Response to GSS

safety of the public and the resources, and address the concern (in items GSS-14 and GSS-39) to maintain existing roads to avoid long-term adverse effects.

Originally built for management of the timber resource, many of these roads are used for recreation, sport hunting, and subsistence use. The maintenance on these roads would have occurred whether or not timber harvest was planned for this Project Area.

Maintenance and reconditioning of existing National Forest System (NFS) roads is an ongoing process that occurs on a periodic basis. The maintenance and reconditioning of NFS roads on the Project Area may be in the process of implementation, before, during and after the project planning process through separate service contracts to reduce the backlog of deferred maintenance. Reconditioning roads may be done to comply with best management practices, maintain the existing infrastructure for the proposed timber sale, future harvest entries, and other National Forest management activities.

### **GSS - 9b**

The costs of roads are disclosed in the Transportation section of Chapter 3 and included in the financial efficiency analysis. As stated, small sales may be offered if there is interest. Sale size will be determined during implementation.

See response GSS-9a.

### **GSS - 10a**

Given the impact that litigation, injunctions and other factors have had on the ability of the timber industry to purchase and harvest timber during that period, plus the volatile nature of the markets, it is not unreasonable to expect fewer bidders in years when demand is low, and more bidders in years when demand is higher.

### **GSS - 10b**

The values produced using the NEPA Economic Analysis Tool are meant to provide the Responsible Official with a relative ranking of economic value and not an absolute economic value. In the FEIS, the Kuiu project was analyzed using the Residual Value Appraisal (RV) version of NEAT, which is the current Forest Service Handbook direction. The RV system for appraising timber sales is an accepted Forest Service method for determining fair market values for products. RV relies on collecting selling values and costs directly from the purchasers of National Forest Service timber sales and aggregating those values and production costs annually.

## **GSS - 10c**

The sawmill in Wrangell is currently operating and is the sawmill nearest to the Project Area. Forest Service handbook direction is to appraise proposed timber sale projects to the sawmill nearest the timber sale.

## **GSS - 11**

The analysis of jobs and income in the FEIS has been updated to reflect the changes in policy and where logs are being processed. These changes have been necessitated by several factors including current market conditions and manufacturing costs in Alaska that make it difficult for the Tongass National Forest to offer economic timber sales. Economic sales are critical to supply the local processors who depend on a steady supply of timber from the Tongass to remain in operation.

On March 14, 2007, the Regional Forester approved a policy to allow limited interstate shipping of unprocessed Sitka spruce and western hemlock logs, and for future timber sale appraisals to reflect this allowance. This approval authorizes shipment to the lower 48 States of unprocessed Sitka Spruce and western hemlock sawlogs that are: a) smaller than 15 inches in diameter at the small end of a 40-foot log, or b) grade 3 or grade 4 logs of any diameter. Shipments will be limited on each sale to a maximum of 50 percent of total sawlog contract volume harvested of all species; including western redcedar and Alaska yellow-cedar, unless expressly granted an exception in advance based on case-specific unusual circumstances.

The number of jobs and income that may be generated by the project could be affected by the interstate shipping policy, and the potential changes as a result of the policy are now incorporated into the FEIS (see the Timber Economics section in Chapter 3).

See [http://www.fs.fed.us/r10/ro/policy-reports/for\\_mgmt/](http://www.fs.fed.us/r10/ro/policy-reports/for_mgmt/) for volumes exported from 1999-2005.

## **GSS - 12**

Table 3-2 in the DEIS shows that 134 acres of the Security IRA are within the planning area, and that those acres would not be directly affected by the proposed activities. The DEIS states (p. 3-9) that no activities are proposed within this Inventoried Roadless Area.

The FEIS shows both direct and indirect effects to the North Kuiu Inventoried Roadless Area (as defined in the 2003 SEIS). Alternative 4 would have the greatest effect on this roadless area. Approximately 207 acres would be directly affected by road building and timber harvest. Indirectly, including the affects to the zone of influence, about 551 acres would be affected. This zone of influence is described in the table footnotes which state that the total area affected includes a 600-foot buffer around proposed timber harvest units and a 1,200-foot buffer along proposed temporary roads within the Inventoried Roadless Area.

As stated in GSS – 1b the Forest Plan amendment will not address new Wilderness recommendations. The North Kuiu Roadless Area would still be eligible for Wilderness consideration in the next round of forest planning and for designation as a non-development LUD in the current Forest Plan amendment.

## Response to GSS

The DEIS did not analyze the potential impacts to the wilderness characteristics of the Security IRA because it stated there would not be any harvest within that Roadless Area (DEIS p. 3-9). (This decision was made in the 2003 SEIS).

For the North Kuiu IRA, the opportunity for solitude and serenity, scenic, fisheries, vegetation, recreation, biological, cultural, and research values, and current uses for the North Kuiu IRA were discussed in the DEIS (pp. 3-9 to 3-12). These were used as units of measure to compare effects between alternatives (DEIS p.1-18). These are the same factors used in the 2003 SEIS. The DEIS compared the expected changes from the alternatives against the existing conditions. The SEIS found no known significant or unique features or values, opportunity for solitude low, opportunity of primitive recreation moderate, overall integrity not pristine, vegetation typical of Southeast Alaska, known cultural resource sites, and no recreation places within the North Kuiu IRA. Since the proposed alternatives would remove acres but would not change the above values, the effects to the overall Roadless Area were considered minimal.

The settlement agreement for Natural Resources Defense Council v. U.S. Forest Service, Case No.1 :03-cv-0029-JKS signed by both parties in April 2007 has been approved by the District Court on May 23, 2007. As part of this settlement agreement, the Forest Service will not sign new RODs or other decision documents for timber sales in Inventoried Roadless Areas or on Kuiu Island. For purposes of this agreement, the Forest Service will not take this and other actions described below until 30 days after publication of the notice of availability of the FEIS for the Tongass Forest Plan amendment in the Federal Register, unless the Forest Service designates a later effective date for the new plan, in which case the Forest Service will not take these actions until the effective date designated by the Forest Service.

The North Kuiu IRA is not the only roadless area left on north Kuiu. Figure 3-1 in the DEIS shows Security, Keku, and Camden IRAs and Table 3-1 (p. 3-8) in the DEIS shows that North Kuiu IRA is the smallest of these Roadless Areas. All these IRAs provide values associated with Roadless Areas. In addition, the Forest Plan designated approximately 73% of the Security IRA into non-development land use classifications.

### **GSS - 13a**

The North Kuiu Roadless IRA would still exceed 9,000 acres in all action alternatives and would not be committed to a developed status or eliminated from options for consideration as a non-development LUD (DEIS Ch 3 p. 3-21)(see item GSS-1b). None of the alternatives would change the current condition of the Security IRA (FEIS Chapter 3, Issue 1: Roadless Areas Section.) This project will be consistent with the Forest Plan.

### **GSS - 13b**

See response GSS-1a

### **GSS - 14**

Road maintenance is an ongoing process. See GSS-9b.



The purpose and need of the Kuiu Timber Sale DEIS is discussed on pp. 1-2 and 1-3. Road maintenance and reducing the density of roads used during harvest activities is not part of the purpose and need. Alternative A, the No-Action Alternative, responds to the request for no new road construction, road reconditioning, or timber harvest. The ongoing Tongass ATM process responds to road maintenance and road density objectives on Kuiu Island. The Petersburg Ranger District ATM analysis will look at all road systems on the District. The ATM decision will include RMOs and any further road closures. As stated earlier in GSS-9a, road maintenance on Kuiu Island is completed through annual road maintenance monies. The Kuiu Landscape Assessment also lists recommendations for road management (Appendix A Tables E, F, and G) including 87.8 miles of roads on Kuiu Island recommended for management as closed to vehicle traffic. The proposed road closures in the Kuiu Timber Sale FEIS respond to the opportunity to accomplish some of the recommended road closures during the timber sale.

### **GSS - 15a**

There are many ways to display the effects of harvest on productive old-growth (POG) forests. Table 2-2 on page 2-17 of the DEIS displays a summary comparison of alternatives and is not all-inclusive. A more detailed table of the effects within the Project Area can be found in Table 3-11 (p. 3-39) of the DEIS, including the percent changes in POG.

The Forest Plan FEIS (Part 1, p. 3-387) analyzes the predicted amount of POG remaining within the WAA at the end of the rotation (2095) rather than the amount of POG removed. In order to compare current levels with Forest Plan predictions (DEIS p. 3-72,) the acres of POG remaining within both the WAA and the planning area in the tables are shown, however, the percent acres of POG removed within the planning area are discussed in further detail on page 3-40.

### **GSS - 15b**

The acres of coarse canopy forest are displayed in Table 3-12 (page 3-41) in the DEIS. Coarse canopy is also discussed in Chapter 2 of the FEIS.

### **GSS - 15c**

There was no discussion on pages 3-18 and 19 related to low-elevation POG, however, Table 3-18 on page 3-52 of the DEIS will be clarified with the remaining acres of POG below 800 feet and the total percent of harvest planned within this habitat. The historic acres of POG below 800 feet in elevation will be displayed.

### **GSS - 15d**

The Forest Plan FEIS (Part 1, p. 3-373) analyzes effects to deer by the predicted amount of deer habitat that would remain within the WAA at the end of the rotation rather than the amount of deer habitat removed. In order to compare current levels with Forest Plan predictions, the acres of deer habitat remaining in the WAA are shown.

### **GSS - 15e**

The effects to deer habitat carrying capacity are displayed by alternative (Table 3-21 p. 3-54 for the WAA and in Table 3-24 p. 3-57) in the DEIS. The summary of the effects of

## Response to GSS

the alternatives for subsistence use is the statement at the bottom of Table 2-2 in the DEIS.

The correct multiplier is 100 deer/sq-mile for an HSI of 1.0 as noted in the Tongass National Forest Annual Monitoring & Evaluation Report for Fiscal Year 2000 p. 2-155 and the Emerald Bay Appeal No. 06-10-00-0002 Southeast Alaska Conservation Council, et. al.

In 1996, an interagency group of biologists met to review and discuss the deer model in use at the time. One recommendation from the group was that HSI scores be modified, and subsequently deer model scores were adjusted (from a range of 0 to 1.0) to a range of 0 to 1.3, with the highest score (as in the previous model) assigned to south-facing, low elevation, low snow level, high-volume old-growth stands. This information is documented in the Tongass Plan FEIS Part 1 (pages 3-367 and 3-368). The carrying capacity (deer/square mile) multiplier that equates to an HSI score of 1.0 has been adjusted several times. Based on information supplied by research, the latest adjustment equates 100 deer/square mile with an HSI score of 1.0 (TNF 2000 Annual Monitoring and Evaluation Report released in April 2001 and instructions provided on the deer model spreadsheet). There is no documentation to support the assertion that the 100 deer/square mile carrying capacity was intended to match an HSI score of 1.3.

### **GSS - 15f**

The correct multiplier was used to estimate deer carrying capacity (see response 15e) and is displayed in a table in the Alexander Archipelago Wolf section of Chapter 3 in the FEIS.

The effects to wolves would be similar with the implementation of any alternative; therefore, the effects to wolves are discussed under the Alexander Archipelago Wolf portion of the Effects Common to all Alternatives section of this Chapter. The alternative comparisons (pp. 3-68 – 3-71) address the effects of the proposed alternatives on wolves.

The comparison of effects to wildlife species starts in the DEIS on page 3-67 – 3-68 with the effects common to all alternatives through 3-73. Comparisons of Effects are on page 3-39 – 3 -71. The Cumulative Effects are on pages 3-71 – 3 -74.

### **GSS - 16**

The acres of POG lost in natural events were removed from the current condition in the FEIS.

Effects of the proposed alternatives on POG high, medium, and low volume stands are displayed in Table 3-11 (p. 3-39) in the DEIS.

### **GSS - 17**

As described in the DEIS (p. 3-41), the matrix is the availability of management lands subject to timber harvest. Within the Project Area, 93 percent of the area is in the Timber

production LUD (p.1-6 and p.1-9). The discussion and analysis of “Matrix” would be the same as the discussion and analysis of the Timber Production LUD. The Forest Plan analyzed the amount of forested lands that would remain at the end of the rotation (Forest Plan FEIS p. 3-387). These projections were not a goal, standard, or guideline that is required to be followed, and because the information is repetitive and confusing, it has been removed from the FEIS. The discussion of Matrix lands can still be found in the Wildlife Specialist Report.

### **GSS - 18**

The deer model uses the volume strata map, consistent with Forest Plan direction (TLMP FEIS, p. 3-365).

### **GSS - 19**

The Kuiu deer habitat capability analysis used the approved current habitat capability model. Components of this model include average winter snow depth, elevation, aspect, and timber volume strata. Use of the volume strata map is consistent with Forest Plan direction (TLMP FEIS, p. 3-365).

A recent study published in the Journal of Wildlife Management (69(1):322-331, DeGayner, Doerr and Ith) concluded that there was a lack of relationship between winter deer use and volume class. By contrast these researchers “[f]ound a consistent relationship in habitat selection using timber volume strata.” Research has demonstrated that the volume strata map is a statistically valid method of stratifying the forest for timber volume.

It is reasonable that the deer model uses the volume strata map, since it was the only statistically valid map available at the time and it utilized research findings on deer habitat selection and timber volume. Currently, a new map is being researched to better evaluate forest structure. This map is undergoing peer review and is currently being tested for its utility for evaluating deer habitat.

Challenging the components and application of the deer model is a Forest Plan-level issue. It is outside the scope of the Kuiu Timber Sale Project analysis to arbitrarily rewrite the model. The deer model is maintained and updated at the Forest level. Any changes to the model will be the result of field observations, thorough analysis, and peer review.

The Forest Service uses TimTyp for evaluating coarse canopy forest in order to respond to requests from the State.

### **GSS - 20**

The Wildlife Resource Report states that volume classes 6 and 7 from the Tongass GIS library were used to portray the currently best available information for coarse canopy stands and that the historic amount of coarse canopy was extracted from Mylar maps and pre-harvest aerial photos and added to the GIS library. The report also states that the mapping based on older aerial photos is not as accurate as those derived from more recent



## Response to GSS

photos and field mapping; however, it does offer a fairly good approximation for the purposes of comparing alternatives.

The Tongass National Forest does not currently have a peer reviewed method for delineating and mapping varying levels of canopy coarseness. A model for mapping tree size and density is being tested for accuracy. As of May 25, 2005, the Tongass Forest Supervisor has directed that all timber harvest NEPA projects use volume class 6 and 7 to portray the currently best available information for coarse canopy stands. In addition, the Forest Plan directs for the use of volume strata for vegetation analysis and mapping. This direction was followed in the Kuiu Timber Sale.

Current Forest direction (Cole 2005) is to use volume classes 6 and 7 to represent coarse canopy forest, as stated below:

“Use volume class 6 and 7 to portray the currently best available information for coarse canopy stands in the wildlife section. A table that displays volume class by alternative will be included in the wildlife section. The amount of volume class 6 and 7 will be included as part of the small OGR analysis.”

Coarse canopy was displayed using volume class 6 and 7 within the wildlife specialist report and in the DEIS (pp.3-40 and 3-41). This corresponds with the high coarse canopy reported by Caouette and DeGayner (2004).

### **GSS - 21a**

As discussed in GSS-18 and 19, the deer model is maintained and updated at the Forest level. The model was used as intended as discussed in GSS-15e. Any changes made to the model at the Forest level will be the result of field observations, through analysis, and peer review.

### **GSS - 21b**

The DEIS (p. 3-52) further clarifies that the wildlife models used for the Forest Plan analysis are useful for comparing alternatives, but were never meant to predict population numbers (DeGayner, 1992). The model's intended use is to make distinctions between alternative treatments. The models do this by providing numbers that represent habitat capacity. This is a theoretical long-term carrying capacity, not actual population numbers given normal winter conditions. These numbers are displayed in the DEIS (Table 3-29 p.3-83). The related comparison of effects by alternatives (pp. 3-69 – 3-71) use those numbers as intended by comparing the percentage of change to the capacity of the habitat to support deer.

The deer population numbers set by the State of Alaska were developed using the Deer Habitat Capability model. While it is unfortunate that actual numbers are used, these numbers are population objectives and not actual numbers of deer. The models are used to compare the impacts of the alternatives against the desired condition; in this case the population objective of the WAA.

It has also been estimated that a deer population at carrying capacity could support an annual harvest by hunters of up to about 10 percent of winter carrying capacity, with the

population remaining stable and hunter satisfaction remaining fairly high (Flynn and Suring 1993 *in* 1997 FEIS p. 3-361). Without the use of numbers it is not possible to determine what 10 percent of the winter carrying capacity would be.

Throughout the DEIS and FEIS, readers are reminded that these numbers are theoretical.

The numbers from the model are rounded to the nearest whole number, because further manipulation of the data to the nearest 10<sup>th</sup> or 100<sup>th</sup> would imply a greater precision than the theoretical numbers the model generates. The actual whole numbers from the model are used in the analysis so as to not skew the data. Again, readers are continually reminded throughout the DEIS and FEIS that these numbers are theoretical.

The use of the word “phantom” in the DEIS was to try to help the reader to understand that the numbers derived from the model are not real deer numbers but rather, information in the form of numbers used as a comparison of effects by alternatives.

### **GSS - 21c**

The DeGayner 1992 document referenced on p. 3-14 does contain information on the reliability of habitat capability models. Additional creditable reviews of habitat capability models have been cited and are available in the planning record. The Council on Environmental Quality gives direction to prepare analytic rather than encyclopedic environmental impact statements (Sec. 1502.2(a))

### **GSS - 21d**

Additional information regarding the effects of road densities on marten has been added to the FEIS in the Wildlife section of Chapter 3. Road density is not a component of the Habitat Capability Model; however, studies have shown that road density may affect the quality of habitat for marten through trapping (Ruggerio et al. 1994, Suring et al. 1992). The road density factor was appended to the 5.0 version of the marten model but never incorporated. It is also not apart of the current model, version 7.0, used for this analysis.

Road density on Kuiu Island was calculated using open road density because most of the former temporary roads in the Project Area were decommissioned after their use was terminated. National Forest System roads that are closed were placed in storage. Decommissioned roads and roads placed in storage have signs of removed structures; intact water bars, and are generally grown closed with alder. There is little evidence of ATV use on most of these roads, mainly due to the remoteness of Kuiu Island and the impassibility on the roads once the stream crossings have been removed. Most personal vehicle use on the island is in the form of pickup trucks, which cannot navigate the alder or the mound and pit type barriers normally found on decommissioned and stored roads. Foot trails along these roads are common.

The FEIS reports that the current open road density for WAA 5012 is 0.46 mi/mi<sup>2</sup> and the total road density for the WAA is 0.68mi/mi<sup>2</sup>. All action alternatives would decrease the open road density within the planning area by placing currently open roads into storage

## Response to GSS

(see the Transportation section Chapter 3 for current and proposed road densities by alternative).

### **GSS - 21e**

The FEIS and Wildlife Specialist Report have been corrected to say: “Deer habitat capability models likely overestimate the carrying capacity for deer” (Person et al. 1997). The model was developed to estimate impacts to habitat capability, not deer population numbers.

### **GSS - 21f**

The deer/wolf model described has not been reviewed by the Tongass National Forest. Current Tongass National Forest direction is to use the Forest Plan deer model to determine habitat capability for the planning area and determine if the action alternatives will meet the 18 deer per square mile requirement to maintain sufficient animals for wolves and human consumption (Person et al. 1997, Puchlerz 2002, and Cole 2005).

The Wildlife Specialist report acknowledges that the effect of deer habitat loss on deer populations is nonlinear. The addition of the above mentioned wolf factor is one way the model has been adjusted as new information is acquired. The Tongass National Forest Land and Resource Management Plan Implementation Policy Clarification 1998 (TPIT) recognized that both the deer model and wolf/deer equilibrium model made certain assumptions and contain a certain amount of variability, which needed to be considered when using any model. The model represents just one tool to be used in doing project level analysis. Models are best used to make relative comparisons between alternatives rather than actual populations. Other factors need to be considered by the professional biologist rather than solely relying upon model results (TPIT 1998, p.16).

Changes to models and factors are more properly addressed at the Forest level.

### **GSS - 21g**

The personal communications with Dave Person have been reviewed. They were not relevant to this project and were not added to the planning record because this communication speaks to the wolf predation rate on Sitka black-tailed deer in southeast Alaska and the consumption rate of food (deer) per kilogram of wolf body weight per day. The deer multiplier expresses the theoretical number of deer a given habitat can support as a function of the HSI score. Although the notes from the May and June 2005 wildlife biologist conference calls do not contain any direction, they are contained in the planning record.

### **GSS - 21h**

Columns for the year 2046 have been added to Tables in Issue 2 of the FEIS. See also GSS - 21j.

### **GSS - 21i**

Table 3-14 in the FEIS shows the HSI value for the historic condition, current condition and future condition grown to 2046. As managed stands reach stem exclusion age, which



the model assumes will occur 26 years after harvest, deer habitat is reduced with the loss of browse. This assumption is part of the current condition HSI values. This information is included in Chapter 3 of the FEIS.

### **GSS- 21j**

The DEIS explicitly states that deer habitat capabilities are based on average winters. The DEIS (p.3-52) describes the deer habitat capability model and how the model assigns HSI values based on normal winter conditions and average winter snow depths. In fact, the first paragraph states:

The deer habitat capability model developed for the Forest Plan was used to predict the potential number of deer that the habitat within the Kuiu Timber Sale Area can support over time. The result is not an actual population number but a theoretical long-term carrying capacity given **normal winter conditions**.

And the next paragraph of that page uses the word **average snow depth** three times to describe the winter condition.

The DEIS (p. 3-53) further discusses the deer model ... “This number represents the theoretical maximum number of deer that an area can support over the long-term, assuming **normal winter conditions**.”

Severe winter conditions would have a greater impact than shown in the model. However, there is no model available for severe winters and no way of knowing when or if a severe winter will occur.

### **GSS - 21k**

The nonlinear deer population concerns were addressed in GSS 21g.

### **GSS - 22a**

The DEIS (p. 3-25) contains a detailed description of the effects of harvest compared to natural disturbance and includes a discussion which compares the effects of natural wind disturbance to timber harvest.

### **GSS - 22b**

The effects of silvicultural treatments on deer habitat are discussed in the DEIS (pp. 3-50 – 3-51) with Table 3-18 (p. 3-52) showing acres of POG, and high value wildlife habitat (below 800 feet) harvested by alternative.

Discussions have been added to the FEIS to make it clear that the model treats partial cut units as clearcut units in all alternatives. A footnote has been added to the tables that compare the HSI by alternative. The deer model is not solely relied upon for the discussion of the biology of deer. Local knowledge and site-specific examples are given in the DEIS (p. 3-51).

# Response to GSS

## **GSS - 22c**

Please see pages 3-164 – 3-165 in the DEIS for the descriptions of two-aged management and group selection. In general, the harvests will fall within plus or minus 10 percent of the targeted retention figure for these systems.

For single-tree selection the DEIS (p. 3-166) states that the single tree selection “maintains a multi-aged structure by removing some trees in various size classes distributed across the stand....[t]his maintains or creates a stand of three or more distinct size classes.” It is not to be assumed that smaller trees will be retained in the place of larger trees.

## **GSS - 22d**

The HSI values from the deer model are for clearcuts and no adjustments were made. The discussion of partial harvest on corridors and important deer winter range has been increased to address the role of partial harvest on corridors and deer habitat. See also response GSS-22b.

## **GSS - 22e**

In an attempt to keep costs down, few photos are published in EISs.

## **GSS - 22f**

In the DEIS Figures 3-5 and 3-6 shows the current HSI scores by quartile, with the unit pool and contour lines. The reader can easily deduct where the important winter range can be found for deer. Figure 3-4 shows the same thing for marten.

## **GSS - 23a**

Most of the maps in the DEIS include a managed stand layer. The scale of the maps allows the reader to see the majority of north Kuiu Island and the amount of harvest that has been completed in that area. The photo included with the comments only shows a single drainage, and does not include the Project Area. The maps in the DEIS allow the reader to see the relationships better.

## **GSS - 23b**

Fragmentation was analyzed in the Forest Plan. A large block of productive old-growth (POG) in the Project Area would be projected in the small old-growth reserve and remain unfragmented. The largest block of old-growth in the area is the North Kuiu Inventoried Roadless Area, of which 9,456 acres are forest and over 90% is POG. If any of the action alternatives is implemented, over 8,300 acres of old-growth would remain unfragmented.

The Forest Plan does not require a site-specific fragmentation analysis. As mentioned in GSS 22d, the discussion on the function of the corridors has been expanded. The request to discuss connectivity for units that close gaps between previously logged units is noted.

## **GSS - 23c**

As mentioned in 22d the discussion on the function of the corridors has been expanded. The request to have units that isolate habitat dropped from the unit pool is noted.

## **GSS - 23d**

Refer to the DEIS (pp. 3-164-166) for further discussion on the desired future condition and how the stand is expected to function for wildlife after harvest.

The wording has been changed to better reflect that the action alternatives address the degree of fragmentation differently, rather than reduce fragmentation.

## **GSS - 24a**

Additional information has been added to the Subsistence portion of the FEIS concerning the annual response rates to the Subsistence reports and the reliability of those reports.

## **GSS - 24b**

See response GSS - 15e.

## **GSS - 25a**

The team strives to utilize all comments in developing a stronger document. The unit card is a summary of the field visits and helps to identify the concerns of the specialists and the appropriate response to that concern. This can then be utilized by the layout and implementation teams. The unit card is limited in its information but more detailed information is available from the field notes that are in the planning record.

Unit card information does not include who visited the site. That information is available in the field notes and cards in the planning record. A statement has been added to the introduction of Issue 2: Deer Habitat and Subsistence Use (Chapter 3) that a Biologist or appropriately trained field technician visited the proposed units. When something relevant was noted in the field cards or notes it was placed on the unit card.

## **GSS - 25b**

The unit cards each contain the Volume Strata by high, medium, and low, and in the Wildlife/Biological Diversity portion of each unit card is the number of acres of important deer winter range, high value marten habitat. A more detailed description of the units is available in the field cards and notes in the planning record.

Timtyp does not come from field visits any more then HSI or Vol-strata data.

More field information was added to the cards as requested.

## **GSS - 25c**

Descriptions of the proposed harvest for units with two prescriptions for one alternative have been better clarified on the unit cards.

## **GSS - 25d**

The silvicultural prescriptions are located on the unit card which accompanies each map. The majority of these units are designed for cable logging systems. Where a unit lists both cable and shovel logging systems the shovel logging systems will be used on slopes



## Response to GSS

less than 35 percent. This can be determined from the topographic lines on the unit card maps. Units planned for helicopter logging list this system on the unit card narrative.

### **GSS - 25e**

All Class I and Class II stream buffer widths are identified on the Appendix B Unit Cards. Units with Class I and II streams are 109, 109b, 111, 208a, 307, 308, 401, 402, 403, 404, 412, 414, 415, 416, 418, and 503.

### **GSS - 25f**

The corridor information has been updated on the unit cards and the medium HSI information has been corrected for the FEIS.

### **GSS - 26a**

Information requests were not ignored. Requests were filled within a few days of when they were received. The planning record includes a log of requests and when and how they were addressed. The public is always welcome to come to the office during business hours and view the planning record, however, when they need to be copied and mailed the process takes longer.

### **GSS - 26b**

Please refer to GSS-18.

### **GSS - 26c**

Scoping comments are reviewed and pertinent and relevant information is incorporated into the EIS.

### **GSS - 26d**

Analysis of biodiversity, including fragmentation and connectivity, were addressed in the DEIS (pp. 3-24 – 3-37) in the Wildlife Resource Report.

### **GSS - 26e**

The wildlife models are discussed in both the DEIS and FEIS in Chapter 3 and in greater detail in the Wildlife Resource report available in the planning record.

### **GSS - 27**

The Fadden (2005) memo is part of the planning record, however, the memo is not setting a policy. It is Fadden's recommendation to continue to use the models in a fashion consistent with past practice as officially sanctioned by the senior forest leadership on the Tongass. It is the decision of the Forest Supervisor to use the Forest Plan deer model (Cole, 2005). To use other models that are untested on the Tongass or to change the parameters of the current deer model would be irresponsible.

### **GSS - 28**

To analyze a project such as the Kuiu Timber Sale on one scale would not give a complete picture of the effects to the resources, the public, and the Responsible Official. Different scales of analysis were completed to best analyze the effects of the sale on that

particular resource. The rationale for the scales used in each analysis has been clarified in the FEIS and in the Resource Reports available in the planning record. The FEIS attempts to clarify which scale of analysis is used.

The DEIS (p. 3-216 Table 3-80) displays all existing designated roads, and their status, within the Project Area including Roads 6415 and 6402 that delineate the Project Area boundary.

The FEIS uses the WAA scale as the smallest area for road density following Forest Supervisor direction (Cole 2005). Wolf was assessed using both WAA and biogeographical province (island-wide) road density figures.

### **GSS - 29**

The information for historic coarse canopy forests is incomplete and/or unavailable. It is not logistically or economically feasible to visit each harvested site to measure stumps to determine the historic habitat condition. The level of analysis needed was accomplished by assuming that the majority of the past harvest occurred in high volume timber stands. The assumptions are based on the knowledge that the majority of past harvest occurred along valley bottoms and in many cases included high volume stands. This leads to an assumption that most likely overestimates the amount of coarse canopy forests that were harvested and would not lead to an underestimate the degree of effect past harvest has had on high volume coarse canopy forests. A “hard-look analysis” was made by assuming a greater impact than what probably occurred.

### **GSS - 30**

The analysis has been corrected.

### **GSS - 31**

The Integrated Resource Inventory (IRI) crew conducted field surveys for MIS species in 2003. These surveys included 113 plots. The MIS species included: red squirrel, black bear, moose, river otter, Sitka black-tailed deer, marten, wolf, northern goshawk, Vancouver Canada goose, bald eagle, red-breasted sap-sucker, hairy woodpecker, brown creeper, great blue heron, and osprey. Field records are available in the planning record.

The Forest Plan’s standards and guidelines include direction for Wildlife Habitat Planning. The FEIS provides direction to “[c]onduct project level inventories to identify heron rookeries and raptor nesting habitat using the most recent inventory protocols” (TLMP p. 4-116). The TPIT (Appendix A p. A-4) provides the clarification of “most recent inventory protocols” as:

Hérons - “during project field work from April to July, project personnel shall scan intertidal mudflats within the analysis area for the presence of foraging great blue herons.”

## Response to GSS

Raptor nests - “report any sightings to the team biologist who will conduct follow-up site visits to assess nesting raptor presence. Use nonspecific calls (goshawk or great horned owl) to elicit raptor responses to locate potential nests.”

Inventories for herons and raptors were conducted during surveys for other wildlife including marbled murrelets, goshawks, breeding birds, and MIS plot surveys.

### Herons

Great blue heron inventories occurred during field visits and are noted in the wildlife survey field notes which have been added to the planning record. Great blue herons were sighted on three separate occasions in 2003 and on 6/5/03 the area between Rowan Bay and Clear Creek was searched for signs of a rookery with no rookery found.

### Raptors

Other raptors inventoried included goshawk, sharp-shinned hawk, red-tailed hawk, and great horned owl and are noted in the wildlife survey field notes which have been added to the planning record. No active nests were located.

The planning record was a work-in-progress during preparation of the DEIS. The record has been completed and the goshawk survey information is in the planning record.

### **GSS - 32a**

Due to well-trained field crews, two potential den sites were located; site 2003 was determined to be a den. This site occurs in a unit that has been dropped from the unit pool, and monitoring during 2004 and 2005 determined the den to be unused both years. Site 2004 was questionable as to whether it was a den and monitoring in 2005 determined the site unused.

As described in the DEIS, (p. 3-66) Dave Person, ADF&G biologist, was consulted. He determined one site was a wolf den and the other site was most likely a resting site. (This information has been changed from the DEIS which said ‘bear den’). To be on the conservative side, a 1,200-foot buffer was placed around both locations.

The FEIS (p. 4-117) states, “Design management activities to avoid abandonment of wolf dens.

- a) Maintain a 1,200-foot forested buffer, where available, around known active wolf dens. Road construction within the buffer is discouraged and alternative routes should be identified where feasible. No road construction is permitted within 600 feet of a den unless site-specific analysis indicates that local landform or other factors will alleviate potential adverse disturbance.
- b) If a den is monitored for two consecutive years and found to be inactive, buffers described above are no longer required. However, in the spring-time, prior to implementing on-the-ground management activities (timber harvest or road construction), each known den site will be checked to see if it has become active.”



As stated in the unit card, this den was monitored from 2003-2005 and no activity was noted in 2004 or 2005. Although the den has been inactive for the last two years, the unit boundaries were moved to exclude the site.

The deer population on Kuiu Island remains above the recommended population to sustain wolves. The DEIS (p. 3-65) discussed that Person, et al. (1996) concluded that maintaining an average long-term deer habitat capability of at least 18 deer per square mile over broad areas should be sufficient to both provide for sustainable wolf populations and meet hunter demand for deer. The deer habitat capability analysis of Kuiu Island shows enough habitat to currently support 27 deer per square mile.

### **GSS - 32b**

The scoping comments from ADF&G were used to design alternatives that did not target the highest value important deer winter range. Table 3-25 shows that while there is harvest planned within the important deer winter range it composes the minority of the total acres within each action alternative. The following alternative information shows:

- Alternative 2: 128 acres (26%) important deer winter range harvested from a total of 491 acres,
- Alternative 3: 130 acres (16%) important deer winter range harvested from 794 total acres harvested,
- Alternative 4: 311 acres (22%) important deer winter range harvested from a total of 1425 acres harvested, and
- Alternative 5: 264 acres (20%) important deer winter range harvested from 1231 total acres harvested.

### **GSS - 32c**

Person (2001) did not make a distinction between open and closed roads in his model. However, he stated that he was making the assumption that while the U.S. Forest Service closed some roads by removing culverts and bridges that policy was sporadic and most roads were open for vehicular traffic.

Within the Project Area, most of the roads currently closed were done so by removing culverts (including stream crossings) and log stringer bridges. In many cases they are not accessible to vehicles, including off-road vehicles (ORVs). The proposed temporary roads will be decommissioned with the removal of all structures, rendering them impassible.

Person (2001) recognized there was a difference with regard to use on roads for those areas connected to the main system of roads and for those wildlife analysis areas that were not connected. Person (2001) found the average harvest for wildlife analysis areas connected to the main road system was 4.1 wolves and was much higher than the average of 1.3 wolves for wildlife analysis areas that were not connected by the road system.

Person (2001) estimated that a total density of roads  $\geq 0.53$  km/km<sup>2</sup> (0.33 mi/mi<sup>2</sup>) for wildlife analysis areas connected to the main road system would likely result in

## Response to GSS

overharvesting wolves. For wildlife analysis areas that were not connected to the main road system, the limit for density of roads was  $1.04 \text{ km/ km}^2$  ( $0.65 \text{ mi/mi}^2$ ).

Regardless of whether Person (2001) made no distinction between open and closed roads in his modeling, he recognized the reality of the difference when the road was correctly closed to vehicular use. He believed that managing human access by closing roads from motorized use and limiting construction of new roads were measures necessary to conserve wolves over the long-term.

Harvest records from ADF&G on Kuiu Island show the harvest of wolves since 1984 has averaged five animals with a high of 16 wolves in 1993 and a low of zero wolves in 1984 and 1990.

The DEIS (p. 3-66) recognized the importance of measuring road densities below 1200 feet.

In a study conducted on Prince of Wales and Kosciusko Islands from 1992 to 1995, Person et al. (1996) found that WAAs with road density of 0.7 miles per square mile below 1,200 feet in elevation experiences a twofold increase in wolf mortality. The area was calculated using road density area within a WAA below 370 meters (~1,200 feet) elevation as the denominator. Wolves spend most of their time at low elevations and calculations of road density reflect this relation. In a concurrent radiotelemetry study, the average annual mortality was 50 percent of the population, which is not sustainable (Person et al., 1996).

Page 3-68 shows the open road density below 1,200 feet for WAA 5012. The FEIS has been changed to reflect the above rationale, to remove the road density by planning area, to add more discussion on road density by WAA (the scale to be measuring road densities for wolves, Person et al 1996) and to show the total road density in WAA below 1,200. The density shown was 0.5 mile per square mile, which is still well below the 0.7 mile per square mile figure. The above road discussion had been added to the Wildlife Report.

### **GSS - 33a**

The DEIS (p.3-73) recognized the short-term potential benefits of logging from increased berry production and the longer term impacts from the closed canopy which may cause black bear populations to decline due to loss productive foraging habitat.

### **GSS - 33b**

The DEIS p. 3-257 says

Impacts to recreation and sport activities during logging may prove negative due to increased traffic and possible noise disturbance. Also, the planned closure of currently open roads would limit access in the long-term. New temporary road access might prove beneficial for outfitter and guide activities and subsistence users. Access would be short-term since all new roads would be closed after harvest. Recreation activities occurring in Saginaw Bay and Security Bay during logging may be affected by noise disturbance. If the Saginaw Bay LTF were used, people in Saginaw Bay would be affected by barge activities.

### **GSS - 34**

The Forest Plan standards and guidelines states: “cooperate and coordinate with State and other Federal agencies to better understand the life history requirements and distribution of the marbled murrelets,<sup>1</sup>” There is no requirement to survey project areas to identify nests. Despite this, stands were surveyed for marbled murrelet nesting activity in 2003, field survey information can be found in the project record. At this time, no nests have been found. If a nest or nests are found in the Project Area they will be protected as required by the Forest Plan.

### **GSS - 35**

All information discussed in resource reports is not displayed in the FEIS. The rest of the paragraph states that they found that the low marten numbers were related to low densities of long-tailed voles.

The resource report also covered discussions with Rich Lowell, Area Biologist for the Alaska Department of Fish and Game located in Petersburg, Alaska, which included the status of the marten populations on Kuiu Island, the historical trapping records, road access, and trapping effort.

The Forest Plan identified areas of timber harvest in higher risk biogeographic provinces to retain the features of forest stand structure. The provinces do not include the Kuiu biogeographic province (Forest Plan 4-118). As the DEIS (p.1-9 Table 1-1) demonstrates, 170,585 acres are designated as development LUDs (35 percent) on Kuiu Island. Less than 16 percent of the development LUD acres on Kuiu Island have been harvested. At this time, marten viability is not a concern.

Additional information from Flynn and Schumacher (2004) was added to the Wildlife Report.

### **GSS - 36**

“1997 TLMP p. 4-12” refers to providing for maintenance of fish habitat enhancements. The reference to connectivity is on p. 4-120 in the Forest Plan.

The Wildlife Report has an in-depth analysis of connectivity, which includes a discussion of the conservation strategy.

Additional analysis of the effects of removal of the leave strips and the method of harvest has been added to the FEIS.

Riparian reserves which were harvested were not included as corridors in the analysis of connectivity.

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<sup>1</sup> And to “maintain a 600 foot, generally circular, radius of undisturbed forest habitat surrounding identified murrelet nests, where available.”



## Response to GSS

The concern over maintaining wildlife corridors is acknowledged and the request for dropping of several units has been noted. Also see response to 22d.

There are no Units 102, 206, 301, or 408, and while there is a Unit 409 there is no 409a or 409b. Please refer to the FEIS for unit numbers.

### **GSS - 37**

The forest is evaluating small endemic mammals and the Pacific Northwest Research Station (PNW) is conducting long-term studies to identify the existence of endemic mammal taxa throughout the island archipelago of Southeast Alaska (Dr. Winston Smith and others). These studies will continue and may be accelerated to examine islands less than 163,000 acres in size for the potential presence of locally endemic taxa that may be at risk as a result of additional vegetation management activities (TNF Annual Monitoring & Evaluation Report, 2004).

Marten and small mammal trapping by Flynn and Schumacher occurred on Kuiu Island between 2001 and 2002 and is mentioned in the wildlife report along with an analysis on the endemic marten population on Kuiu Island. Additional small mammal trapping by the Petersburg Inventory Resource Crew in 2003 is available in the planning record. None of the species collected were rare endemics.

TPIT Appendix A p. A-5 clarifies Forest Plan direction for endemic mammals:

For islands greater than 50,000 acres, if presence or distinctiveness of the taxa is uncertain and potential management risk posed are high or unknown then apply the RNA sampling protocol as outlined in TPIT Appendix A p. A-5. If endemic taxa are already known to be present and the conservation strategy has a high likelihood of sustaining endemic taxa, no surveys are required.

As noted in GSS-35, only 35 percent of Kuiu Island is in development LUDs and less than 16 percent of the developments LUDs have been harvested. Because of the large acreage of non-development LUDs on Kuiu Island, the conservation strategy has a high likelihood of sustaining endemic taxa.

### **GSS - 38**

There is no requirement or need identified to prevent non-motorized access to local resources, nor was there any plan to exclude traffic from roads during the project operating years. The short-term increase in road densities during logging, due to the temporary road construction, has been analyzed in the DEIS. As Table 3-81 (p.3-218) shows, there will be an overall decrease in road densities with all action alternatives. The ongoing Access Travel Management plan (ATM) will address the maintenance levels of existing forest roads.

The FEIS discusses the methods used to place open NFS roads into storage (see Transportation in Chapter 3). The FEIS also mentions throughout the document that all temporary roads would be decommissioned and all new and reconditioned NFS roads

would be closed after harvest is complete. More detail has been added about road closure and decommissioning.

More site specific effects of road crossing have been added to the FEIS.

### **GSS - 39**

As discussed in GSS-31, the Integrated Resource Inventory (IRI) crew conducted field surveys for MIS and other wildlife species in 2003. These surveys included 113 plots, which recorded any sighting of scat, track, verbal note, trail, feeding station, or actual sighting of red squirrel, black bear, moose, river otter, Sitka black-tailed deer, marten, wolf, northern goshawk, Vancouver Canada goose, bald eagle, red-breasted sap-sucker, hairy woodpecker, brown creeper, great blue heron, and osprey. Field records are available in the planning record. These surveys help complete the hard-look analysis required by NEPA.

The Vancouver Canada goose and red-breasted sapsucker have been included in the FEIS.

The MIS species were chosen for the analysis for this project, rather species that best represent the affected environment. The rationale for selection is indicated in Table 3-14 in the DEIS (p. 3-43).

### **GSS - 40**

Twenty-four units were surveyed for sensitive plants. The unit pool contains 37 units, so 65% of the units were surveyed. Normally 100% of the units and roads are not surveyed. The habitats that are most likely to contain sensitive plants are the priority to survey (DEIS p. 3-149 to 3-151). The Petersburg Ranger District does not have a written protocol for how intensely to survey for sensitive plants, but the Ketchikan Area had one written in 1999. That protocol suggested, "At a minimum, 30% of likely harvest units and 50% of likely roads should be surveyed." While conducting the surveys within units on Kuiu, roads within the units were walked as part of the unit survey. Also, while accessing the units, the access roads proposed for reconditioning were examined (DEIS pp. 3-149 & 3-150).

### **GSS - 41**

The proposed project is consistent with management of Kadake Creek as a Recreational River under the Wild and Scenic River Act (Public Law 90-542, as amended; 16 U.S.C. 1271-1287).

More information has been added in Chapter 3 of the FEIS to clarify allowable activities within a Recreational River Land Use Designation (LUD) and to analyze the effects of the proposed activities on the Kadake Recreational River corridor.

The harvest impact to the Kadake Recreation River corridor would be minimal (less than one percent of the Recreation River corridor). Within the 6,585-acre Kadake Recreation River corridor, the project proposes partial harvest treatment of 18 acres in Unit 415 for Alternatives 2 and 4, and an additional 31 acres of partial harvest in Alternative 4 in Unit 414 (DEIS and FEIS Appendix B Unit Cards). Alternatives 3 and 5 would not harvest any acres within the river corridor. Road management activity within the river corridor would be limited to reconditioning existing roads or the construction of temporary roads

# Response to GSS

(DEIS, Unit cards, pp B82-85). These activities are allowable in a Recreational River LUD.

Appendix E of the Forest Plan (p. E-251) divides Kadake Creek into four segments; Segment 1 and 3 meet the guidelines for Recreational River classification; Segments 2 and 4 meet the guidelines for Wild River classification. The proposed harvest units in Alternatives 2 and 4 would be in the Recreational River Segment 1. Recreational River areas are defined as those rivers or sections of rivers that are readily accessible by road that may have undergone some development along their shorelines (Forest Plan p. 3-325). Forest Plan goals for Recreation River land use designations includes providing recreation opportunities in a pleasing, though modified, generally free-flowing river setting, while allowing timber harvest, transportation, and other developments (Forest Plan p. 3-112 and 3-118).

The Partial Retention Visual Quality Objective will be applied in areas within the river corridor. The area outside the river corridor will be managed according to the guidelines of the adjacent LUD. In Alternatives 2 and 4, the timber harvest has been designed to meet the Partial Retention Visual Quality Objective as allowed under the standards and guidelines of the Recreational River LUD (DEIS, pp. 3-232 to 3-234, DEIS and FEIS Appendix A Unit Cards).

## **GSS - 42**

The numbers have been corrected in Table 3-43 (Small old-growth habitat reserve options for VCU 398) in the FEIS. The recommendation will be considered when the decision is made.

## **GSS - 43a**

The watershed analysis does include a more intensive, complex, and field-based watershed analysis for the watersheds with greater than 20% harvest in 30 years. The DEIS (p. 3-115 Table 3-40 and p.3-138 Table 3-49) includes a sediment risk analysis for each watershed affected by the project. The DEIS (pp. 3-117 – 3 -122 ) also includes a field-based inventory of stream channel conditions for each watershed with more than 20 percent harvest in 30 years.

The content of the watershed analysis does follow the basic framework outlined in Ecosystem Analysis at the Watershed Scale, even though it is presented in a different format. Notably, the watershed analysis addresses all core topics identified in Ecosystem Analysis, including erosion processes, hydrology, vegetation, stream channels, water quality, species and habitats, and human uses. The six step process outlined in Ecosystem Analysis at the Watershed Scale includes: 1) Characterization of the watershed, 2) Identification of issues and key questions, 3) Description of current conditions, 4) Description of reference conditions, 5) Synthesis and interpretation of information, and 6) Recommendation. All six of these steps can be identified in the watershed analysis, with the exception of Identification of key questions. The watershed analysis does answer the key questions that correspond to the core topics identified in Ecosystem Analysis.



### **GSS - 43b**

The level of analysis for the Rowan Creek Watershed is consistent with the level recommended by the Forest Plan.

### **GSS - 43c**

Additional information has been added to the watershed cumulative effects sections of the document. This includes references to the Catalog of Events that was completed for Kuiu. The analysis of cumulative effects adequately analyzes the effects to watershed resources from past, present, and reasonably foreseeable future activities.

### **GSS - 44a**

A hard look at the cumulative impacts to forest resources from past logging was done in the DEIS and can be found on the following pages:

- Page 1-10, 1-11, and Table 1-2 shows the past harvest in the Kuiu Timber Sale area by decade.
- Roadless Areas pp. 3-21 – 3-22
- Wildlife pp. 3-72 – 3-75
- Subsistence pp. 3-90 – 3-92
- Timber Economics pp. 3-110 – 3-111
- Watersheds pp. 3-124 – 3-125
- Timber and vegetation pp. 3-172 – 3-173
- Fisheries p. 3-185
- Soils and geology pp. 3-206 – 3-207
- Wetlands pp. 3-213 – 3-214
- Transportation pp. 3-222 – 3-223
- Scenery pp. 3-237 – 3-239
- Recreation p. 3-250
- Socioeconomics pp. 3-259 – 3-260
- Heritage Resources p. 3-265

The impacts to regional habitat contiguity and large-scale concerns were evaluated on a Tongass-wide level by the Forest Plan. The Catalog of Events for Kuiu Island was referenced in determining cumulative effects. Effects boundaries were identified by individual resources. Those events from the catalog which had measurable overlapping effects were considered in the individual resource cumulative effects analyses.

### **GSS - 44b**

The Five-year Timber Sale Plan is a dynamic plan which shows potential timber sale projects over a five-year period. The Five-year Timber Sale Plan is reviewed and adjusted annually. The Alecks Timber Sale, as mentioned in the Kuiu Landscape Assessment, is a good example. The Alecks Timber Sale project is not listed on the Five-year Timber Sale Plan signed on November 7, 2005, due to planners foreseeing the need to adjust the scheduling of timber sales in the area. It is important to keep in mind that a Landscape assessment is a “snapshot” of the current situation and the Five-year Timber

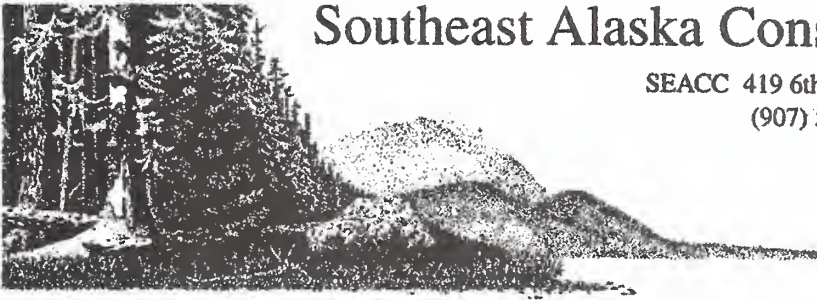
## Response to GSS

Sale Plan is a “living” document that is reviewed and updated annually. The current Five-year Timber Sale Plan no longer lists the Bayport project.

### **GSS - 45 Conclusion**

The request to stop planning on the Kuiu Timber Sale has been noted. A No Action Alternative is part of the range of alternatives being considered by the Forest Supervisor.

The specific unit comments have been addressed in GSS-36.



## Southeast Alaska Conservation Council

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March 20, 2006

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Patricia Grantham  
Petersburg District Ranger  
Tongass National Forest  
USDA Forest Service, Region 10  
PO Box 1328  
Petersburg, AK 99833

Re: comments on Draft Environmental Impact Statement for Kuiu Timber Sale

Dear Ranger Grantham:

The Southeast Alaska Conservation Council (SEACC) submits the following comments on the Draft Environmental Impact Statement (DEIS) published for public comment by the Forest Service on the proposed Kuiu Timber Sale. The DEIS describes the no-action alternative and four action alternatives. The action alternatives propose logging between 14.6 million board feet (MMBF) of timber from 491 acres and 42.65 MMBF from 1,425 acres from the project area Kuiu Timber Sale Area on north Kuiu Island. This sale area includes most of land in Saginaw Bay (VCU 399), the eastern half of Security Bay (VCU 400), and portions of Rowan Bay (VCU 402) and Kadake Creek (VCU 421). Alaska Department of Fish and Game (ADF&G) identified these VCUs as having the highest community use values in its Tongass Fish and Wildlife Resource Assessment (1998).

SEACC is a coalition of 18 volunteer citizen organizations based in 14 Southeast Alaskan communities, including the Customary and Traditional Gathering Council of Kake and Petersburg's Narrows Conservation Coalition. SEACC's membership includes commercial fishermen, Alaska Natives, small-scale timber operators and value-added wood product manufacturers, tourism and recreation business owners, hunters and guides, and Alaskans from many other walks of life. SEACC is dedicated to preserving the integrity of Southeast Alaska's unsurpassed natural environment while providing for the balanced, sustainable use of our region's resources. Even after years of industrial scale logging on public and private lands in Southeast Alaska, the region continues to possess magnificent old-growth forests, outstanding fish and wildlife habitat, vital customary and traditional use and subsistence areas, and excellent air and water quality.

ALASKA SOCIETY OF AMERICAN FOREST DWELLERS, Point Baker • ALASKANS FOR JUNEAU • CHICHAGOF CONSERVATION COUNCIL, Tenakee  
• FRIENDS OF BERNERS BAY, Juneau • FRIENDS OF GLACIER BAY, Gustavus • JUNEAU AUDUBON SOCIETY • JUNEAU GROUP SIERRA CLUB • LOWER CHATHAM  
CONSERVATION SOCIETY, Port Alexander • LYNN CANAL CONSERVATION, Haines • NARROWS CONSERVATION COALITION, Petersburg • LISIANSKI INLET RESOURCE  
COUNCIL, Pelican • PRINCE OF WALES CONSERVATION LEAGUE, Craig • SITKA CONSERVATION SOCIETY • TONGASS CONSERVATION SOCIETY, Ketchikan • TAKU  
CONSERVATION SOCIETY, Juneau • WRANGELL RESOURCE COUNCIL • YAKUTAT RESOURCE CONSERVATION COUNCIL

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## Comment Letter #7 - SEACC

Southeast Alaska's rugged, wild landscape allows Alaskans to pursue a lifestyle no longer available to most Americans.

### I. Inadequate Agency Consultation and Collaboration with Organized Village of Kake

SEACC  
1a

Both Executive Order 13175 and the 1997 Revised Tongass Forest Plan (TLMP) direct the Forest Service to consult and collaborate with Indian Tribal Governments, such as the Organized Village of Kake (OVK), before agency action is taken. Although the Forest Service met with OVK representatives, the proposed action and other action alternatives considered in the Kuiu DEIS indicate that the agency has made little actual effort to accommodate the real concerns of OVK over additional logging on its ancestral lands on north Kuiu Island.

The proposed action and other action alternatives further are evidence that the Forest Service proceeded ahead with deciding what levels of logging were appropriate without meaningfully collaborating with OVK in violation of TLMP. The 1997 TLMP ROD directs "Forest Supervisors and District Rangers to increase their efforts in collaborative stewardship within the communities of Southeast Alaska. Collaborative stewardship means bringing people together to share in the decision making in implementing Forest Plan direction." TLMP ROD at 42. Instead of collaborating with OVK, the Forest Service appears to have dismissed their concerns as insignificant or beyond the scope of the DEIS. *See* DEIS at 1-21 (no more logging and road building on Kuiu Island); 1-22 (don't log anymore from this project area).

According to the DEIS, the Kuiu timber sale implements the management direction contained in the 1997 TLMP. Planning this sale without adequate consultation and collaboration with the OVK is particularly problematic because of the yet-to-be completed, court-mandated revision of the 1997 TLMP. In a decision issued on August 5, 2005, the 9<sup>th</sup> Circuit Court of Appeals found fundamental defects in the 1997 TLMP based on the substantial error made by the Forest Service in estimating the market demand for Tongass Timber. As the court explained, this error "fatally infected [the agency's] balance of the economic and environmental considerations." *NRDC v. USFS*, 421 F.3d 797, 816 (9<sup>th</sup> Cir. 2005).

SEACC  
1b

Given that there is more than enough timber on the existing road system of north Kuiu Island to allow logging to continue at prevailing levels on the Tongass, we urge the Forest Service to halt planning associated with this timber sale while the agency corrects the defects in TLMP. *See* DEIS, Appendix A, Table A-1 at A-4 (indicating that forest-wide logging levels from 2000 to 2005 averaged 45.6 MMBF). This data substantially undercuts the Forest Service's conclusion that "[d]elaying the completion of this . . . project should be avoided because it would substantially undermine the Forest Service's ability to respond to timber demand." *See* DEIS, Appendix A at A-4. To proceed with planning this controversial sale will prejudice the court-mandated plan revision process by predetermining the outcome for the Kuiu project area before the agency conducts a reasoned balancing between managing this area for timber development or other valuable economic and non-commodity uses. Such uses include customary and traditional hunting,

SEACC 1b cont. fishing and gathering, and salmon and steelhead production to support commercial and sportfishing opportunities.

## II. Alternatives

SEACC 2 One reasonable action alternative that was not proposed in the DEIS is a timber sale program similar to the microsale program developed on Prince of Wales Island. Under that program, the Forest Service makes available minor amounts of down or dead trees from the existing road system to supply small purchaser's operations. Such an alternative could meet the needs of small operators in Kake and minimize the impacts to deer habitat from clearcutting that have already caused significant restrictions to Kake hunters' use of this traditional use area.

This alternative could also provide economic benefits to Kake by contracting with local residents to repair the 44 "red" culverts in the project area, 11 of which are on Class I streams. "A red fish crossing is one that cannot pass juvenile fish at some or all flows." See DEIS at 3-180. Given that all the stream systems were identified by the Alaska Department of Fish and Game (ADF&G) as primary salmon producers, fixing these red culverts should be as a management priority for the Forest Service not as an afterthought. DEIS, Table 1-3 at 1-13 ("Evaluate 44 red culverts as opportunities arise").

## III. Faulty Deer Habitat Suitability and Hunter Demand Analysis

Despite the extensive loss of critical deer winter range in the past on north Kuiu Island and evidence of significantly reduced hunter success, the Forest Service appears posed to accept "an immediate decline in habitat capability" under any of the action alternatives. DEIS at 3-83. In fact, the Forest Service concludes that "[t]he potential foreseeable effects from the action alternatives in the Kuiu Timber Sale are not expected to result in a significant restriction of subsistence uses of Sitka black-tailed deer." DEIS at 3-95. This conclusion is based on faulty deer habitat suitability and hunter demand analyses.

SEACC 3a The analysis also suffers because it mixes and matches habitat suitability and hunter demand data for the project area, for WAA 5012, and for the island as a whole. While all the watersheds in the project area are contained in WAA 5012, this WAA also includes nearly 24,000 acres of contiguous forest habitat in Roadless Area 240 (Security). Harvest effort by OVK hunters, however, is generally focused more specifically in those portions of Security, Saginaw, and Kadake Bays closer to the community of Kake within the project area. To better inform the public about the direct, indirect, and cumulative effects from this proposal, we request the Forest Service provide specific information, in a clear, concise format, regarding historical, present, and future conditions for the project area, WAA 5012, and Kuiu Island as a whole.

SEACC 3b The DEIS relies, in part, on the deer habitat capability model to determine an estimate of the potential supply of deer available for subsistence use. DEIS at 3-80. As discussed in the appeal of the Emerald Bay Timber Sale filed with the Forest Service on January 5, 2006, the agency's use of the deer model has been seriously flawed for a variety of reasons. See SEACC, et al. Appeal of Record of Decision for the Emerald Bay Timber

## Comment Letter #7 - SEACC

SEACC  
3b cont.

Sale at 49-55 (excerpts attached as Exhibit 1). For example, the Forest Service has applied an incorrect deer carrying capacity multiplier of 100 deer/sq. mile in an area with a Habitat Suitability Index of 1.0; this is the same multiplier used in Kuiu DEIS. See DEIS at 3-53. NEPA requires the Forest Service disclose the shortcomings of their use of the model and provide a new analysis based on a corrected interpretation of the model.

The DEIS also emphasizes that important deer habitat is productive old-growth below 800 feet in elevation. *Id.* at 3-51. This is precisely the habitat that has been logged in the past. *Id.* at 3-195. Nevertheless, about a third of the acres targeted for clearcutting under the preferred alternative is similar low-elevation habitat. *Id.*, Table 3-18 at 3-52.

SEACC  
3c

Another approach to evaluating the impacts of additional logging on north Kuiu subsistence hunting is simply to look at historical harvest levels. This approach is consistent with the statement in the DEIS that “[t]he evaluation of deer is based on comparison of supply and demand.” DEIS at 3-80. The DEIS goes on to explain that “[i]f the demand for deer exceeds the supply, then a significant possibility of a subsistence restriction exists.” *Id.* Despite the theoretical habitat capacity estimated for the project area, the fact is that the data shows that deer hunter success is significantly below that theoretical capacity. We suggest that historical data on hunter success may be a more accurate indicator of the quality of deer habitat within the project area than the theoretical results of the agency’s deer habitat capability model.

The Kuiu DEIS tabulates deer subsistence harvest data for the entire island for the years 1993 through 2003. For these 11 years, the average annual harvest is only 19 deer. DEIS Table 3-27 at 3-81. The DEIS provides no explanation for why actual deer harvest is so far below the habitat capability estimated but only suggests a handful of reasons why the die-off of 1971-72 was more severe on Kuiu than Prince of Wales or Admiralty Island. DEIS at 3-50. Indeed, the DEIS acknowledges that “[w]hile Kuiu Island seems to be getting more use, there has been no significant change in the number of deer harvested.” DEIS at 3-58.

SEACC  
3d

The Forest Service also draws unreasonable conclusions about the purported benefits of past and proposed logging prescriptions on habitat capability. The agency proposes harvest prescriptions that retain 50% of basal area even though the discussion in the DEIS presents no scientific justification that such a prescription will protect deer habitat. See DEIS, Table 2-1 at 2-10. For example, the agency relates apples to oranges by citing to the 1995 Doerr study that analyzed the favorable effects of removing 20 and 40 percent of stand volume, not basal area. The DEIS also cites to the 2001 Deal study and concludes “plant structures...appear to be more resilient to moderate ranges of partial cutting (below 50 percent basal area removal).” DEIS at 3-51. However, the proposed prescriptions are for 50% retention, not less than 50%. Additionally, while the DEIS describes the benefits of enhanced plant understories, it ignores questions about the ability of the remaining forest canopy to intercept snow and maintain important deer winter habitat..



We also urge the agency to acknowledge newer studies of forest management effects on vegetation and habitat. In particular, the agency should address Hanley's statement in his 2005 study that "[e]mpirical results demonstrating a benefit of within-stand clearcut gaps and residual patches do not yet exist, except of the smallest scale of individual-tree selective cutting."<sup>1</sup> Because the Forest Service failed to provide a clear scientific basis for their selection of partial clearcutting prescriptions, these prescriptions do not qualify as reasonable mitigation measures for anticipated impacts to customary and traditional deer harvest.

A comparison of Unit 414 in Figures 3-5 and 3-6 further illustrate the illusory effect of these clearcutting prescriptions on deer habitat. Figure 3-5, which illustrates deer winter range in 2005, indicates that most of the 72 acres in unit 414 is high value deer habitat.

SEACC  
3e

The prescriptions proposed for this unit call for two-aged management or clearcutting 50% of the basal area in this unit. DEIS at B-82. Figure 3-6, however, which shows deer winter range as of 2045, shows no change in the habitat capability for unit 414. The DEIS presents no scientific evidence to support the contention that clearcutting a substantial portion of the high volume timber strata in this unit, three-quarters of which is located below 800 feet, will result in no loss of habitat capability.

SEACC  
3f

The DEIS also relies on ADF&G estimates of hunter demand from 1960-1968 to support its conclusion that there is sufficient habitat to meet hunter demand in WAA 5012. *See* DEIS at 3-82. When it appealed the Crane and Rowan timber sale in 1998, however, OVK submitted the testimony of six tribal hunters who hunted on Kuiu during this period.<sup>2</sup> These declarations established that ADF&G lacked a reasonable basis for its hunter demand estimates. In its decision denying OVK's appeal, the Forest Service promised "to work collaboratively with Kake residents in reviewing and possibly revising the data on hunter demand for Kuiu Island. The information gained will be used in planning for future projects." *See* ARO's Recommendation to Regional Forester at 18-19 (Oct. 16, 1998)(attached as Exhibit 3). Nevertheless, the Forest Service continues to rely on this contradicted and unreliable data. *See* DEIS at 3-82. The DEIS does not indicate that the promised collaborative effort with Kake residents ever occurred.

In sum, the DEIS' discussion of impacts on deer numbers and habitat from the proposed action is severely compromised by mixing and matching data for the Project Area, for the WAA, and for the island as a whole, relying on a flawed interpretation of the deer habitat capability model and the unsupported conclusions as to benefits from proposed two-aged management, and by failing to provide readily available historical subsistence harvest data.

<sup>1</sup> *See* Hanley, T. A.: Potential management of young-growth stands for understory vegetation and wildlife habitat in southeastern Alaska. *Landscape and Urban Planning* 72, 95-112, at 106 (2005). Available on-line at: <http://www.treeseearch.fs.fed.us/>, accessed March 20, 2006.

<sup>2</sup> *See* Exhibit 2 (OVK's appeal of the Crane & Rowan Timber Sale (Sept. 14, 1998) and the six declaration submitted as exhibits to that appeal).

# Comment Letter #7 - SEACC

## IV. Watershed Analyses

The Tongass Fish and Wildlife Resource Assessment (ADF&G, 1998) identified the stream systems for the Saginaw, Security, Rowan, and Kadake Value Comparison Units (VCUs) 399, 400, 402, and 421 as primary salmon producers. ADF&G also identified Kadake Creek, the largest salmon producer on Kuiu Island, as a primary sportfish producer and one of 19 "high value" watersheds in Southeast Alaska for sportfishing.<sup>3</sup> Despite this ranking and the Forest Service's decision in 1997 to recommend 23 miles of Kadake Creek as a recreational river under the Wild and Scenic River Act because of its high historic, recreation, and fisheries values, the action alternatives propose logging between another 124 acres (Alternative 2) and 283 acres (Preferred Alternative) in this valuable watershed.

SEACC  
4a

Given the extent of previous management activities in the project area watersheds, both NEPA and TLMP require the Forest Service to prepare watershed analyses to evaluate direct, indirect, and cumulative effects. The revised Forest Plan states that "[w]atershed analysis shall use the basic framework relating to aquatic resources and riparian resources as described in: 'Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis' (August 1995)." Revised TLMP at J-1. The "basic watershed analysis" presented in Chapter 3 and Appendix C of the DEIS, as well as in the Kuiu Island Landscape Assessment, provide little more than descriptions of existing data; analysis or interpretation of referenced data is completely lacking. For example, the DEIS notes that "[d]ata for Kadake Creek were excerpted from an unpublished report prepared in 1994 by the Forestry Sciences Laboratory in Juneau." DEIS, Appendix C at C-24. This reference must refer to the Kadake Pilot Watershed Analysis Report (1994), which followed the format of the Federal Guide, in support of the *Anadromous Fish Habitat Assessment* (1995). Although the assessment is listed as a reference in the DEIS, the Kadake Pilot Watershed Analysis Report is not. Please clarify whether the referenced assessment includes this pilot watershed analysis. If it does not, please include it in the administrative record for this project. For the record, we note this pilot watershed analysis emphasized the need for field verification during project planning and identified "common verification needs," including stream channel stability, riffle stability, streamflow, and macroinvertebrate sampling. See Kadake Pilot Watershed Analysis Report at 7-10, 11, 7-13, 14.

SEACC  
4b

SEACC  
4c

While the Federal Guide and TLMP intended a systematic analysis of a watershed's features, conditions, processes and interactions, the discussion in the DEIS is little more than a sediment risk analysis. Although an evaluation of the effects of logging and road building on sediment production is an important factor for assessing direct, indirect and cumulative effects to watershed resources and fish habitat, it focuses on effects of flows on stream channel equilibrium. By doing so, the evaluation completely ignores the potential adverse cumulative effects to salmon and aquatic resources from the long-term reduction in summer low streamflows resulting from logging. See Hicks, et al., at 224-

SEACC  
4d

<sup>3</sup> See USDA, Forest Service. 2003. *Tongass Land Management Plan Revision, Final Supplemental Environmental Impact Statement. Roadless Area Evaluation for Wilderness Recommendations, Appendix C, Vol. 1 at C-379.*

SEACC  
4d cont.

225 (1991a).<sup>4</sup> Although the DEIS considers the effect of logging on water yield, this analysis focuses on peak flows; neither the DEIS nor watershed analyses consider baseflows and the possible long-term reduction in summer flows in assessing cumulative watershed risks and risks to the project area's valuable fishery resources. Consequently, no assessment is made regarding the effects of logging on low flows. It is also unclear whether the standard for "hydrologic recovery" used in the DEIS incorporates these effects or not. The narrow scope of the watershed analyses is insufficient to adequately identify, evaluate, and disclose the direct, indirect and cumulative effects of timber development activities on watershed functions, resources, and uses as required by TLMP, the National Forest Management Act (NFMA), the Clean Water Act, and NEPA.

SEACC  
4e

We also specifically question the adequacy of the cumulative effects analysis for the Kadake watershed. For example, when assessing stream channel condition, the DEIS limits its analysis to the main stem of Kadake Creek. *See* DEIS, Table 3-48 at 3-122. The fork of Kadake Creek, however, most directly affected by the proposed alternatives is the West Fork, not the main stem. According to the Kadake Pilot Watershed, the subwatersheds on the West Fork have the highest natural sensitivity and the highest natural potential risk of sediment production. Kadake Pilot Watershed Analysis Report at 5-54, 6-12. As a result, the DEIS fails to provide a hard look at the effects of the action alternatives on the West Fork of Kadake Creek because direct and cumulative effects are masked by focusing the description and effects analysis in the DEIS on the entire Kadake watershed.

SEACC  
4f

The DEIS also identifies a variety of mitigation measures to address the cumulative watershed effects in the project area. Absent from this list is the non-system road in the West Fork watershed, off of Forest Road 6416. According to the 1994 pilot watershed analysis, this temporary road "failed directly into a Class III stream immediately, upstream of Class I habitat." Kadake Pilot Watershed Analysis Report at 5-47. Please clarify the status of restoration work on this road.

SEACC  
4g

## V. Removal of Fill from Temporary Roads Required

The DEIS explains that shot rock will be used as fill "[w]here temporary roads will cross wetlands." DEIS at 2-7. To qualify for an exemption under Section 404, however, construction of the proposed temporary roads in the Kuiu sale must comply with the baseline provisions contained in the Corps of Engineers' regulations. *See* 33 C.F.R. § 323.4(a)(6). These regulations explicitly require removal "in their entirety" of all temporary road fills and restoration of the area to its original elevation. *Id.* at § 323.4(a)(6)(xv).

SEACC  
5

According to the DEIS, the Forest Service will "decommission" the temporary roads by removing drainage structures and constructing additional water bars. *See* DEIS at 2-21. The Forest Service does not commit to removing the fill from these temporary roads as required by the Corps' regulations. Therefore, the Forest Service has not demonstrated

<sup>4</sup> This study is listed in the references of Chapter 4 of the DEIS.



## Comment Letter #7 - SEACC

that construction of these roads will comply with the baseline conditions specified in the Corps' regulations for exemption of temporary roads from Section 404.

### VI. Log Transfer

SEACC  
6

The DEIS states that either the Saginaw log dump or Rowan Bay barge facility may be used. While reconstruction of the Saginaw dump is required, the Rowan Bay facility is in good condition. DEIS at 3-186, 3-220. Although the Forest Service reports the extent of existing bark accumulation at both sites, no effort is made to describe specifically the existing marine environment or the status of recovery of these waterbodies. Both waterbodies were previously listed as "impaired" because of excessive bark accumulations. Although the Alaska Department of Environmental Conservation has delisted the waters, that decision was premised on the reduction of existing bark accumulations below an arbitrary one-acre threshold, not on whether this water quality limited segment will provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water. To comply with NEPA, the Forest Service must provide current data describing the existing condition of the areas previously used for log dumping and storage and assess the effects from the discharge of any additional bark at the Saginaw site on the recovery process. The Forest Service should also consider other alternatives for reconstructing this dump, including the shot-rock fill ramp design. A design like this could support a barge loading ramp and avoid further degradation of the marine waters of Saginaw Bay. Without providing specific information regarding beach slope and water depth, however, it is impossible for the public to determine if such a design is reasonable.

Thank you for your careful consideration of these comments.

Best regards,



Buck Lindekugel  
Conservation Director

## **SEACC - 1a**

Refer to OVK-1 and MAJ-6.

## **SEACC - 1b**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

## **SEACC - 2**

The microsale program on Prince of Wales Island referenced in the comments is a program set up for the microprocessors and individuals from the numerous communities located around that island. Although microsales could be offered, Kuiu Island does not have the same level of community development as Prince of Wales, and without this community structure it is unlikely the same demand will exist for minor amounts of down or dead trees from the existing road system.

Due to the expense of mobilization to and from Kuiu Island, lack of any local processing facilities, and the distance to established processing facilities, it is unlikely that an operator will be interested in purchasing timber sale offerings with volumes less than 1,000 MBF from this Project Area (DEIS Chapter 3 p.3-105 and the FEIS Chapter 3 – Timber Sale Economics section).

## **SEACC - 3a**

The scale of analysis reflects the resource that is being analyzed. Deer habitat is analyzed by WAA and Project Area for historic, present, and proposed future conditions (DEIS pp.3-54 - 3-57), and island-wide deer densities are analyzed as prey species to support wolf populations (DEIS p. 3-68).

Road densities are analyzed on a WAA basis below 1200' elevation for wolf (DEIS p. 3-68) and in the Project Area for black bear hunting pressure.

The information has been presented for historic, current and proposed future conditions in most cases, and can be found throughout the document.

## **SEACC - 3b**

The multiplier used in the Kuiu DEIS is 100 deer/sq-mile for an HSI of 1.0 as noted in the Tongass National Forest Annual Monitoring & Evaluation Report for Fiscal Year 2000 p. 2-155 and the Emerald Bay Appeal No. 06-10-00-0002 Southeast Alaska Conservation Council et al.

## Response to SEACC

In 1996, an interagency group of biologists met to review and discuss the deer model in use at the time. One recommendation from the group was that HSI scores be modified, and subsequently deer model scores were adjusted (from a range of 0 to 1.0) to a range of 0 to 1.3, with the highest score (as in the previous model) assigned to south-facing, low elevation, low snow level, high-volume old growth stands. This information is documented in the Tongass Plan FEIS (Part 1, pp. 3 – 367 – 3 – 368). The carrying capacity (deer/square mile) multiplier that equates to an HSI score of 1.0 has been adjusted several times. Based on information supplied by research, the latest adjustment equates 100 deer/square mile with an HSI score of 1.0 (TNF 2000 Annual Monitoring and Evaluation Report released in April 2001 and instructions provided on the deer model spreadsheet). The Forest Service has no documentation to support the assertion that the 100 deer/square mile carrying capacity was intended to match an HSI score of 1.3.

### **SEACC - 3c**

The deer harvest information is reliant on hunters reporting the location and the number of animals harvested; therefore, the estimated hunter demand may underestimate the actual demand and attempts to bridge this information gap have been made. See Response to OVK 4.

### **SEACC - 3d**

The comments on the Doerr 1995 results have been noted.

The FEIS has been corrected to say:

Historic partial harvest treatments (50 percent retention) on the Tongass National Forest studied by Bob Deal (2001) show that these treatments could provide deer food and habitat better than clearcut treatments. The light (1-25% BA) and medium (26-50% BA) cutting intensity plots were similar to the uncut plots for both the recently harvested and older sites, and they did not differ significantly in community structure from the uncut plots. Partial harvest stands do not show the dramatic rise and fall of blueberry abundance in stands 20 to 80 years after clearcutting. Deal also noted that the decrease in blueberry abundance following partial harvest was small when compared to that of clearcutting. Community plant structures in the forests of Southeast Alaska appear to be resilient to moderate ranges of partial cutting (50 percent basal area removal). Overall, partial cutting maintained diverse and abundant plant understories comparable to the plant communities typically found in old-growth stands (Deal 2001). (See Response to ACMP for further information).

The DEIS (p. 3-51) discussed the values of partial harvest as deer and moose forage areas rather than retaining winter range. Additional information on how these areas may function as corridors for a longer time period than traditional clearcuts has been added to the Wildlife section of Chapter 3 in the FEIS.



## **SEACC - 3e**

The figure was meant to show changes from the current condition and does not include harvest of the proposed unit pool. The unit pool has been removed and 'From Current Condition' has been added to the title to clarify Figure 3-6.

## **SEACC - 3f**

See Response to OVK 4.

## **SEACC – 4a**

Within the Recreational River corridor of Kadake Creek, Alternative 2 proposes to harvest 18 acres and Alternative 4 proposes to harvest 49 acres. Both silvicultural prescriptions call for 50% retention of the basal area (DEIS Appendix B, p.B-82 and B-84).

The proposed activities are not expected to significantly affect sportfishing in Kadake Creek due to buffers and the implementation of BMPs. The proposed project is consistent with management of Kadake Creek as a Recreational River under the Wild and Scenic River Act. (Public Law 90-542, as amended; 16 U.S.C. 1271-1287). The Forest Plan (p. 3-112) permits timber harvest on suitable timber lands if adjacent lands are being managed for that purpose in accordance with the standards and guidelines for the stated VQOs. See GSS-41 for further discussion.

## **SEACC – 4b**

The content of the watershed analysis does follow the basic framework outlined in *Ecosystem Analysis at the Watershed Scale*, even though it is presented in a different format. Notably, the watershed analysis addresses all core topics identified in *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis* (August 1995) including: erosion processes, hydrology, vegetation, stream channels, water quality, species and habitats, and human uses. The six step process outlined in *Ecosystem*

- 1) Characterization of the watershed,
- 2) Identification of issues and key questions,
- 3) Description of current conditions,
- 4) Description of reference conditions,
- 5) Synthesis and interpretation of information, and
- 6) Recommendation

All six of these steps can be identified in the watershed analysis with the exception of Identification of key questions.

## **SEACC – 4c**

The Pilot Watershed Analysis Report for the Kadake Creek Watershed was used as a general reference. It was not included in the planning record for the project or the list of references in Chapter 4 because it was not cited specifically in the FEIS or the reports prepared for the DEIS.

# Response to SEACC

## **SEACC – 4d**

Long-term effects of timber harvesting and road building on summer low flows are not well studied. Hicks et al. (1991) documented two case studies in which the long-term effects of logging on summer low flows were opposite: an eventual decrease in low flows was detected in one watershed (after a period of increase), but an increase in summer low flows persisted in the other. The results of the study by Hicks et al. are not conclusive enough to be broadly applied.

Variable effects on low flows following harvest have been reported in rain-dominated coastal watersheds (Keppeler and Ziemer 1990, Hicks et al. 1991). A study in Southeast Alaska concluded that timber harvest may result in higher levels of stream flow during dry periods (Bartos 1989). However, recent analysis of these data suggests that the change could be due to climatic cycles, not timber harvest (US Geological Survey 2000).

## **SEACC – 4e**

The level of detail in the analysis of watersheds in the Kuiu Timber Sale Project Area is based on direction in the Forest Plan. The Forest Plan (USDA Forest Service, 1997), in Appendix J, defines the core topics of the watershed analysis, and guides the scale and intensity of the analysis. The scale, intensity, and complexity of watershed analysis is to be commensurate with the level of cumulative risk.

## **SEACC – 4f**

Watershed delineation and identification is described in the DEIS on page C-2. The Tongass National Forest recognizes the US Geological Survey (USGS) hierarchical watershed mapping and numbering system. For the sake of consistency, all watersheds analyzed for the Kuiu Timber Sale project, including the Kadake Creek Watershed, correspond to the 6<sup>th</sup> level hydrologic unit code (HUC).

## **SEACC – 4g**

The restoration work is outside the scope of this project and has not been completed at this time. It has been incorporated into the Watershed Restoration Plan (WRP) for the Kadake Creek Watershed as a possible watershed improvement project. Watershed Restoration Plans are internal documents used to compete for funds that are allocated across the Tongass for watershed stewardship projects. The WRP for the Kadake Creek Watershed is expected to be complete in Fiscal Year 2007. Implementation of the restoration work in the WRP will depend upon the project proposal competing favorably with other restoration project proposals.

## **SEACC - 5**

The DEIS does not characterize temporary roads as “temporary fills.” Temporary roads are defined in the glossary of the DEIS. The use of the road is temporary, but the footprint (fill) is not. This is why the effects of temporary roads are included in the DEIS. Temporary roads used in the past are shown as “decommissioned roads” in Figure C-1. The Forest Service decommissions temporary roads by removing drainage structures, constructing water bars and blocking the entrance to motorized traffic. These measures adequately “decommission” the road to allow natural conversion back to the original state: i.e. timber growth on the road footprint. In their memo of February 10,

2006, commenting on the DEIS (included in this appendix), the Corps of Engineers concurred that "...all temporary roads proposed for this project are exempt from Clean Water Act permitting, provided they are constructed according to best management practices..." These best management practices have been incorporated into BMP 12.5 (FSH 2509.22) and they will be implemented on all roads constructed for the Kuiu Timber Sale.

### **SEACC - 6**

The status of the LTFs can be found in the DEIS (p. 3-181).

A description of the existing marine environment conditions of the LTFs can be found in the DEIS (p.3-186).

Descriptions of both the Rowan Bay LTF and Saginaw Bay LFT, as well as the location, size, and condition of the sort yards can be found in the DEIS on page 3-220.



# Comment Letter #8 - The Committee on Conservation of Forests and Wildlife - CCFW



THE COMMITTEE ON CONSERVATION  
OF FORESTS AND WILDLIFE  
230 CAMPFIRE ROAD, CHAPPAQUA, NY 10514  
TEL. (914) 941-0199

March 20, 2006

Kris Rutledge – Team Leader

Attn: Kuiu Timber Sale

USDA Forest Service

P.O. Box 1328

Petersburg, AK 99833

RE: Kuiu Timber Sale

Dear Ms. Rutledge,



Hunters and anglers consider ourselves to be the original conservationists. One of our heroes was President Theodore Roosevelt, who created the Tongass National Forest back in 1907. The Tongass is the largest of our national forests, and represents a substantial portion of the largest remaining temperate rainforest on the planet.

CCFW  
1

It is disturbing to see the Forest Service continue to move ahead with timber sales in primitive areas of the Tongass when the current forest plan has been deemed illegal and a new planning process is in its beginning stages.

CCFW  
2

That is why we are especially troubled to see the plans for the 1,425-acre Kuiu sale. To date, over 28,000 acres of forest have been clearcut on Kuiu Island. North Kuiu Island is already heavily impacted, with significant habitat fragmentation due to roads and clearcuts. Kuiu Island holds many areas and species that are important to sportsmen and women both inside Alaska and around the country.

Kuiu is perhaps most famous for its record-class black bears. A study by the Alaska Department of Fish and Game found that Kuiu is home to one of the highest densities of black bear in North America. 21 Boone & Crockett record book black bears have been taken on Kuiu Island, ranking only behind much-larger Prince of Wales Island in number of Alaska trophies. In fact, on a per-acre basis, Kuiu has historically produced a higher number of trophy black bears than Prince of Wales. Approximately 80% of the black bear hunters on Kuiu are not Alaska residents, but they do support the seven guide-outfitters that hold special use permits to hunt on Kuiu as well as bring significant financial benefits to other Alaska businesses through their expenditures on transportation, lodging, groceries, equipment, and supplies. The Draft Environmental Impact Statement for this proposed sale states "These businesses depend on the consistent population level of black bears on northern Kuiu Island. Any decrease in population would decrease income, and could possibly put outfitter/guides out of business if populations dropped

## Comment Letter #8 – The Committee on Conservation of Forests and Wildlife - CCFW

CCFW 3 low enough.” The growth of logging roads on northern Kuiu Island has increased hunter access which has led to more restrictions including quotas on bear harvest. Incidentally, since the road system has had increasing impact on the habitat of northern Kuiu Island, the trends seem to show average harvest levels and skull size of black bears have decreased.

CCFW 4 Other game species on Kuiu include Sitka black-tailed deer (which have seen a drastic population decrease on Kuiu due to loss of much of the coarse-canopy old growth habitat most capable of supporting deer during the winter months), moose, and wolves. The heads of Security and Saginaw Bays, which would be impacted by the proposed timber sale, are important areas for waterfowl hunting, supporting several guiding operations. Waterfowl and black bear hunting also occur throughout Kadake Bay.

CCFW 5 This proposed timber sale would impact 7 watersheds and the associated road construction could involve as many as 42 stream crossings. The affected watersheds have already experienced harvest levels ranging from 8.2% to 31.3%. Further logging and roading in these watersheds would only serve to increase the negative effects on these waters and fish populations.

The Kadake Creek watershed is the largest producer of steelhead and salmon on Kuiu Island and is used by sportfishermen (especially for coho) more than any other stream on the island.

The Dean Creek watershed holds coho, pink, and chum salmon as well as Dolly Varden.

The Rowan Creek watershed holds coho, chum, and pink salmon as well as Dolly Varden and cutthroat.

The Saginaw Creek watershed holds coho, pink, and chum salmon as well as steelhead, Dolly Varden, and cutthroat.

Watershed # 109-44-10370 (unnamed) holds coho, pink, and chum salmon as well as Dolly Varden and steelhead.

Watershed # 109-45-10090 (unnamed) holds coho and pink salmon as well as Dolly Varden.

Six anadromous fish streams drain into Rowan Bay with Rowan Creek and Brown's Creek being the greatest producers.

Five anadromous fish streams drain into Saginaw Bay with Saginaw Creek and Straight Creek being the greatest producers.

To imagine an island with so many fish-producing streams (and to think that some of the streams are not even named!) and high populations of record-class black bears is to

## Comment Letter #8 - The Committee on Conservation of Forests and Wildlife - CCFW

dream of the wild Alaska that sportsmen around the country wish to visit once in their lifetime.

CCFW  
6

Given that this is a national forest of extremely high value to hunters and anglers, it is disappointing that the Forest Service continues to spend millions of taxpayer dollars on timber projects that end up losing money for the federal treasury. Using the official agency planning figure of \$150,000/mile, the 19 miles of possible new road in this project would cost the American taxpayer up to an estimated \$2,850,000. Additional costs to re-construct another 6.9 miles of road would add to that estimated total.

CCFW  
7

Hunters and anglers would rather see the Forest Service work toward establishing a timber industry in the Tongass that focuses more on second-growth harvest with less emphasis placed on high-grading the dwindling remaining old-growth reserves which are most important for fish and game habitat. By building fewer roads, more funds could be devoted toward the thinning of second growth 'dog hair' forests so these stands come back as good wildlife areas, the maintenance backlog on the existing road system and the repair of culverts that presently impede fish passage on many streams.

CCFW  
8

We respectfully request that the Forest Service cancel the proposed Kuiu timber sale and divert the funds to the above forest restoration purposes. You can get the same amount of jobs in forest restoration as you can by ruining the existing backcountry that is so important to hunting and fishing and the guiding industry. Thank you very much for considering our comments on this matter.

Sincerely,

  
Leonard J. Vallender

Chairman, Conservation Committee of Forest & Wildlife



## **CCFW - 1**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the DEIS, to provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

## **CCFW - 2**

Concern over the acres of clearcuts on Kuiu Island is noted. Note, however, that the 27,856 acres harvested are located on an island 482,101 acres in size of which 64 percent is in non-development LUDs (Kuiu Island Landscape Assessment). Less than six percent of the island has been harvested and less than five percent of the major watersheds include any harvest.

The proposed harvest would have minimal effects to the recreation activities on the island since they are proposed in areas of previous harvest and mostly roaded areas (DEIS, pp 3-240 to 3-250).

## **CCFW - 3**

The DEIS p. 3-63 confirms that the Alaska Department of Fish and Game believe the black bear population on Kuiu Island is stable, and skull measurements have remained relatively stable with the skull measurements averaging 18.6 inches. It is not the logging roads that have led to the restrictions but rather the number of hunters. Most of the logging roads were already in place when the hunting pressure on Kuiu Island began to escalate in the early 1990's (DEIS p. 3-81, Table 3-27.) Due to concerns over the steadily increasing harvest of black bears by nonresident hunters, the Board of Game established a nonresident harvest guideline of 120 bears per year on Kuiu Island (DEIS p. 3-84).

## **CCFW-4**

The DEIS p.3-50 and the FEIS Chapter 3 Wildlife Habitat section relate the deer crash to severe winter weather in the late 1960's and early 1970's rather than to loss of coarse-

# Response to CCFW

canopy old-growth habitat (at that time timber harvest had occurred on less than two percent of the island). It should be noted that the era of heaviest logging occurred between 1970 and 1989 after the deer crash and after these two decades of logging, deer populations continue to climb to a point that hunting was reopened in 1992. Although hunting limits remain low and hunting effort is high, it should be recognized that in the years of the deer crash, less than 4000 acres (8.7%) of the Project Area had been harvested and less than 7000 acres (1.4%) of the island had been harvested.

It should also be noted that deer herds which crashed at the same time on the much heavier logged, roaded, and populated Prince of Wales Island have returned in much larger numbers than those on Kuiu. It must therefore be assumed that factors other than timber harvest alone are restricting the deer from reaching historic population levels. These other factors include the heavy predation from large populations of black bear and wolves (see the Wildlife section in Chapter 3 of the FEIS).

There are no activities planned within Security Bay or Kadake Bay in the Kuiu Timber Sale FEIS, therefore no impacts to these areas are anticipated.

While Security and Saginaw Bays are important waterfowl hunting areas, waterfowl hunting is just an incidental part of guiding operations on Kuiu Island.

## **CCFW -5**

Of the 42 stream crossings, there are two proposed Class II stream crossings by NFS road construction, and two Class I and three Class II stream crossings on existing Road 6417 that is currently in storage. All other stream crossings are on non-fish bearing streams. Best Management Practices identified in the DEIS (Appendix B pp. B-7 – B-9) will be applied to protect water quality where appropriate.

The DEIS (p. 3-182) acknowledges that there will be an increase in sedimentation from road construction; however, this effect is expected to meet state water quality standards. The placement of stream buffers and the implementation of BMPs (DEIS Appendix B pp. B-7 – B-9) is expected to minimize the amount of sediment entering streams. Construction timing windows for stream crossings on roads proposed for reconditioning or storage will be implemented (DEIS p. 3-175). While individual fish may be impacted, the population as a whole is not expected to be affected.

## **CCFW-6**

The cost of temporary road construction is the responsibility of the purchaser. Forest Service Handbook direction (FSH 2409.18) directs that a financial evaluation of alternatives be done for each alternative based upon the appraisal system used to establish the value of timber sales (FSH 2409.22). The accepted procedure for determining the value of timber in a timber sale is to estimate the value of the finished products and subtract all of the costs associated with producing the finished products. Some of these costs are timber falling, logging, hauling, towing, and road construction.

Temporary roads were looked at again in the FEIS and some miles of road were reclassified as NFS road. The proposed action in the FEIS proposes 6.5 miles of new NFS road construction with an estimated cost of \$170,000/mile. Additionally, there are 3.9 miles of temporary road construction with an estimated cost of \$110,000/mile. The total estimated cost of this road construction is \$1,534,000. The cost to re-construct the NFS road in the Kuiu Timber Sale Area is estimated to be an additional \$122,000.

### **CCFW-7**

The Tongass is moving towards providing second-growth timber for industry. Currently, very few second-growth stands are of a commercial size. Prior to the 1950s there was only scattered timber harvest on the Tongass. Beginning in the late 1950s two long-term timber harvest contracts were offered and larger scale harvesting operations were started, resulting in the conversion of old-growth stands to second-growth stands. The majority of these second-growth stands are not yet large enough to provide commercial opportunities. While some second-growth harvest is being investigated in Southeast Alaska, most of this harvest has been near communities with mills where it is more economical to harvest second-growth timber. The second-growth timber on Kuiu is marginal in size for harvest and process, and it is estimated to be another 10 to 20 years before the oldest of the stands on Kuiu are large enough to provide commercial opportunities.

The DEIS pp. 3-158 – 3-159, and the FEIS Chapter 3 Timber and Vegetation section show that the volume strata in the planning area is roughly 78 percent high volume, 18 percent medium volume and 2 percent low volume. All action alternatives would harvest between 77-83 percent high volume, 13-19 percent medium volume and 2-4 percent low volume, well within a range of variability which duplicates the existing volume strata within the planning area.

The Forest Service currently has an active pre-commercial thinning program in most second-growth stands to enhance growth potential and improve wildlife habitat capabilities and has precommercially thinned 4,700 acres of second growth stands in the Project Area. The Forest Service is investigating the replacement or removal of culverts that impede fish passage on a Forest-wide basis. The proposed timber sale action would remove two of these culverts.

For discussion on the funding of roads, see the response to CCFW-6. Funds for the Forest Service are allocated by Congress, and the amount of money allocated to each resource is beyond the scope of this project. It would be irresponsible to use money allocated for one project to fund another project.

### **CCFW-8**

The request to cancel the proposed Kuiu timber sale has been noted. To divert the funds from one resource, such as timber, to another resource, like restoration, is beyond the scope of this project.



## Response to CCFW

There are many different perceptions of “backcountry”; however, much of the planning area has been selected in the Forest Plan for timber development (DEIS 1-5 to 1-7 and FEIS Chapter 1 Forest Plan Land Use Designations section). Much of the infrastructure (roads) in the planning area already exist, and the area has had past harvest. The area does not fit the typical definition of backcountry.

# Comment Letter #9 - Chico Area Fly Fishers - CAFF



"Roger Bevers"  
<rogerbevers@hotmail.com>  
03/15/2006 08:13 AM

To krutledge@fs.fed.us  
vbowlby@digitalpath.net, nomopilz@aol.com,  
lincoln@tie-fast.com, silvermagi@hotmail.com,  
cc danamallard@excite.com, esee@comcast.net,  
dnsleeper@yahoo.com, lwvalley@yahoo.com,  
gencnsl@aol.com  
bcc  
Subject Kuiu timber Sale

March 20, 2006

Kris Rutledge – Team Leader

Attn: Kuiu Timber Sale

USDA  
Forest Service

P.O. Box 1328

Petersburg, AK 99833

RE: Kuiu Timber Sale

Dear Ms. Rutledge,

The Chico Area Fly Fishers has members that fish in Alaska often. We enjoy the pristine forests, rivers and streams and feel that the sale of this timber deal goes contrary to the best interest of the environment. If there is any pertinent information we have not considered about this timber sale, we would like to be informed and kept abreast of the progress. Please email us at the clubs  
above email address or you can email me at: [rogerbevers@hotmail.com](mailto:rogerbevers@hotmail.com). The cutting of roads through the landscape into the forest just to harvest timber is not in the best interest of the future generations of Americans.

Alaska is the only frontier left in the entire U.S. and maintenance to the natural state of the environment is of prime concern for everyone. We welcome your input on this topic. We don't want to be one sided, but we definately will need to be convinced that this is good for the entire Island as well as the whole of Alaska. Therefore, we support the letter below and wish to be involved in the future development of plans.

Sincerely,

Roger Bevers President  
Chico Area Fly Fishers  
[chicoareaflyfishers@sbcglobal.net](mailto:chicoareaflyfishers@sbcglobal.net).

Dear Ms. Rutledge,

CAFF  
1

CAFF  
2

# Comment Letter #9 - Chico Area Fly Fishers - CAFF

Hunters and anglers consider ourselves to be the original conservationists. One of our heroes was President Theodore Roosevelt, who created the Tongass National Forest back in 1907. The Tongass is the largest of our national forests, and represents a substantial portion of the largest remaining temperate rainforest on the planet

CAFF  
3

It is disturbing to see the Forest Service continue to move ahead with timber sales in primitive areas of the Tongass when the current forest plan has been deemed illegal and a new planning process is in its beginning stages.

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That is why we are especially troubled to see the plans for the 1,425-acre Kuiu sale. To date, over 28,000 acres of forest have been clearcut on Kuiu Island. North Kuiu Island is already heavily impacted, with significant habitat fragmentation due to roads and clearcuts. Kuiu Island holds many areas and species that are important to sportsmen and women both inside Alaska and around the country.

CAFF  
5

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CAFF  
6

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CAFF  
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## Comment Letter #9 - Chico Area Fly Fishers - CAFF

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Watershed # 109-44-10370 (unnamed) holds coho, pink, and chum salmon as well as Dolly Varden and steelhead.

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CAFF  
8

(Given that this is a national forest of extremely high value to hunters and anglers, it is disappointing that the Forest Service continues to spend millions of taxpayer dollars on timber projects that end up losing money for the federal treasury. Using the official agency planning figure of \$150,000/mile, the 19 miles of possible new road in this project would cost the American taxpayer up to an estimated \$2,850,000. Additional costs to re-construct another 6.9 miles of road would add to that estimated total.

CAFF  
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(Hunters and anglers would rather see the Forest Service work toward establishing a timber industry in the Tongass that focuses more on second-growth harvest with less emphasis placed on high-grading the dwindling remaining old-growth reserves which are most important for fish and game habitat. By building fewer roads, more funds could be devoted toward the thinning of second growth 'dog hair' forests so these stands come back as good wildlife areas, the maintenance backlog on the existing road system and the repair of culverts that presently impede fish passage on many streams.

## Comment Letter #9 - Chico Area Fly Fishers - CAFF

CAFF  
10

We respectfully request that the Forest Service cancel the proposed Kuiu timber sale and divert the funds to the above forest restoration purposes. You can get the same amount of jobs in forest restoration as you can by ruining the existing backcountry that is so important to hunting and fishing and the guiding industry. Thank you very much for considering our comments on this matter.

Sincerely,

Roger Bevers President  
Chico Area Fly Fishers  
P.O. Box 3583  
Chico, California 95927

## **CAFF - 1**

The Forest Service puts out timber sales because of a legal requirement from Congress. Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA) states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle."

The Kuiu Timber Sale planning area is currently well roaded and would only require construction of between 3.3 and 10.4 miles of roads to implement.

## **CAFF - 2**

The Forest Service is a multiple-use agency and one mandate is to produce timber. Maintaining the natural state of the Tongass National Forest is also a prime concern. Of the approximately 17 million acres on the Tongass National Forest, 78 percent is Wilderness or designated as Natural Setting. On a state-wide basis ANILCA has designated Wilderness across the state and looks out for the national interests of the public.

## **CAFF - 3**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the DEIS, to provide a steady flow of timber harvest volume timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

## **CAFF - 4**

Concern regarding the acres of clearcuts on Kuiu Island is noted. Note, however, that the 27,856 acres of harvest are located on an island of 482,101 acres, of which 64 percent is in non-development LUDs (Kuiu Island Landscape Assessment). Less than six percent of



## Response to Chico Area Fly Fishers - CAFF

the island has been harvested and less than five percent of the major watersheds include any harvest.

The proposed harvest would have minimal affect to the recreation activities on the island since they are proposed in areas of previous harvest and mostly roaded areas (DEIS, pp 3-240 to 3-250).

### **CAFF - 5**

The DEIS (p. 3-63) confirms that the Alaska Department of Fish and Game believes the black bear population of Kuiu Island is stable, and skull measurements have remained relatively stable with the skull measurements averaging 18.6 inches. It is not the logging roads that have led to the restrictions but rather the number of hunters. The hunting pressure on Kuiu Island began to escalate in the early 1990s (DEIS p. 3-81 Table 3-27) long after a majority of the logging roads were already in place. Due to concerns over the steadily increasing harvest of black bears by nonresident hunters, the Board of Game established a nonresident harvest guideline of 120 bears per year on Kuiu Island (DEIS p. 3-84).

### **CAFF - 6**

See CCFW-4 for information on the Sitka black-tailed deer population crash.

See OVK-4 for information on significant habitat to support subsistence needs for Sitka black-tailed deer.

There are no activities planned within Security Bay or Kadake Bay in the Kuiu Timber Sale FEIS, therefore no impacts to these areas are anticipated.

While Security and Saginaw Bays are important waterfowl hunting areas, there are no guiding operations for waterfowl hunting on the Petersburg Ranger District.

### **CAFF - 7**

Of the 42 stream crossings, there are two proposed Class II stream crossings by NFS road construction, and two Class I and three Class II stream crossings on existing Road 6417 that is currently in storage. All other stream crossings are on non-fish bearing streams. Best Management Practices identified in the DEIS (Appendix B pp. B-7 – B-9) will be applied to protect water quality where appropriate.

The DEIS (p. 3-182) acknowledges that there will be an increase in sedimentation from road construction and reconditioning; however, this effect is expected to be short-term (clarified in the FEIS as 48 hours after construction). The placement of stream buffers and the implementation of BMPs (DEIS Appendix B pp. B-7 – B-9) are expected to minimize the amount of sediment entering streams. Road construction, installation of culverts and bridges, and the removal of culverts is expected to temporarily increase sediment delivery but is not expected to degrade fish habitat. Increased sediment may affect individual fish by reducing oxygen levels to developing eggs in spawning gravels and/or trapping of emerging fry in the gravel, the effect is expected to be short-term (48

## Response to Chico Area Fly Fishers - CAFF

hours or less) and the placement of timing restrictions will minimize impacts to fish (see the road cards in Appendix B). The BMP implementation will achieve state water quality standards.

### **CAFF – 8**

Please see the response to CCFW – 6.

### **CAFF - 9**

The Tongass is moving towards providing second-growth timber for industry. Currently very few second-growth stands are of a commercial size. Prior to the 1950s there was only scattered timber harvest on the Tongass. Beginning in the late 1950s two long-term timber harvest contracts were offered and larger scale harvesting operations were started, resulting in the conversion of old-growth stands to second-growth stands. While some second-growth harvest is being investigated in Southeast Alaska, most of this harvest has been near communities with mills where it is more economical to harvest second-growth timber. The second-growth timber on Kuiu is marginal in size for harvest, and it is estimated to be another 10 to 20 years before the oldest of the stands on Kuiu are large enough to provide commercial opportunities.

Congress allocates funds to the Forest Service. The amount of money allocated to each resource is beyond the scope of this project. The temporary roads proposed in the Kuiu Timber Sale are funded by the purchaser, not the Forest Service.

The Forest Service currently has an active pre-commercial thinning program in most second-growth stands to enhance growth potential and improve wildlife habitat capabilities. The Forest Service is investigating the replacement or removal of culverts that impede fish passage on a Forest- wide basis. The proposed timber sale action would remove two of these culverts.

### **CAFF- 10**

The request to cancel the proposed Kuiu timber sale has been noted. To divert the funds from one resource, such as timber, to another resource, such as restoration, is beyond the scope of this project.

# Comment Letter #10 - Sealaska



February 15, 2006

PO 2-21  
Patricia Grantham  
Petersburg District Ranger  
USDA Forest Service  
P. O. Box 1328  
Petersburg, AK 99833

Re: Kuiu Timber Sale Area Draft Environmental Impact Statement

Dear Ms. Grantham:

Sealaska Corporation is the regional Native Corporation for Southeast Alaska. Over 5,000 of our shareholders live throughout every community in this region. Therefore, significant actions contemplated by the Forest Service may have a significant impact on our shareholders as well as the greater Southeast community. Certainly one class of significant actions includes the scheduling and volume of timber sale offerings from the Tongass National Forest. For the benefit of the economy of Southeast Alaska it is very important that the Forest Service offer viable timber sales to a much greater degree than has been the case in the recent past. The lack of available stumpage has caused many saw mills to go out of business much to the detriment of rural village economies.

Therefore, scheduling sales with sufficient economic volume is a very important Forest Service responsibility because agency decisions have such a great impact on this region. Sealaska recommends that Alternative 4 be implemented as presented because it best meets all of the criteria that must be considered in the EIS process. This alternative provides the greatest timber volume while protecting fish and wildlife habitat. The increase in cumulative effects generated from the harvest of the volume being considered can hardly be measured. In addition, if the Forest Service manages the future second growth that will occur, it will benefit some of the wildlife populations in the future.

Alternative 1 is the least responsive to the needs of Southeast Alaska. It does not equitably contribute to the requirements of TTRA. Alternative 2 provides so little timber volume that maintaining such an extensive road system certainly would not support the volume and costly harvest methods being considered. Alternative 3 is not that dissimilar to Alternative 2 because the harvest units are very scattered. ~~Alternative 5 is more economic; however, the increased volume being considered in Alternative 4 outweighs the economic benefits from conventional harvest methods.~~

Sealaska  
1

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One Sealaska Plaza, Suite 400 • Juneau, AK 99801-1276 • Phone (907) 586-1512 • Fax (907) 586-2304

# Comment Letter #10 - Sealaska

Kuiu Timber Sale DEIS

- 2 -

February 15, 2006

Thank you for considering the Sealaska recommendations.

Sincerely,

SEALASKA CORPORATION

A handwritten signature in black ink, appearing to read "Michele Metz", with a stylized flourish at the end.

Michele Metz  
Assistant Lands Manager

cc: Ron Wolfe, Natural Resources Manager, Sealaska Corporation  
Joe Donohue, ACMP Project Specialist, State of Alaska



# Response to Sealaska

## **Sealaska - 1**

The recommendation that Alternative 4 be implemented as presented is noted.

# Comment Letter #11 - David Beebe



David Beebe  
<fvjerryo@mac.com>  
03/19/2006 10:45 PM

To: comments-alaska-tongass-petersburg@fs.fed.us  
cc:  
Subject: Kuiu Timber Sale

Forrest Cole  
Forest Supervisor  
Tongass National Forest

Dear Sir,

I urge you to reconsider your efforts to harvest any more timber from N. Kuiu Island. Aerial views of this landscape are the only way to grasp the astonishing scale of extremes to which the Forest Service feels obligated, despite the stated credo of Caring for the Land and Serving People.

Beebe  
1

It is hard not to reflect on Judge Gould's opinion in the recent ruling regarding the Tongass Land Management Plan in which you Forrest Cole, along with Dennis Bschor, and Mark Rey, were principal defendants. Judge Gould found you all, and the Forest Service in general, guilty of implementing a Forest Plan that was "fatally infected". Your legal defense attempted to argue that projections of a market demand that was twice what it should have been was not significant.

Beebe  
2

That same infection persists in this timber sale that heaps more watershed deconstruction upon Kuiu Island. One cannot care for the land and add to an already staggering total of 27,856 acres of clearcuts in 78 major watersheds. One of those watersheds has lost 60 percent of its integrity due to clearcutting.

One cannot Care for the Land and systematically disassemble its constituent components.

One cannot care for the land while disregarding the fact that the land and its myriad inhabitants have evolved together over the last 10,000 years under a multi-storied, uneven aged canopy. Yet your preferred alternative uses even-aged clearcut management as the dominant harvest method.

Beebe  
3

One cannot care for the land with these harvest methods and pretend well distributed, viable populations of oldgrowth dependent species will not ultimately face genetic tipping points of no return, especially when tipping points are often realized only in retrospect.

Beebe  
4

What we do know is that high quality habitat is being fragmented into increasingly diminishing oldgrowth reserves which simply get redefined as corporate commodities in subsequent timber sales.

When mass wasting in the form of clearcut induced landslides is allowed in Saginaw, Dean, Security, and other unnamed creeks, caring for the land will always be questioned.

The mass wasting of taxpayer dollars funding systematic destabilization of watersheds, fails to inspire visions of the " People" being served.

Beebe  
5

The people are clearly not being served when Environmental Impact Statements must admit that irreversible and irretrievable consequences associated with timber harvest will inevitably ensue. The people are not being served when this agency blithely ignores the legacy of adjacent landholders and the wholesale destruction of ancestral landscapes by native corporate boards. Ignoring the impacts to subsistence needs of the residents of Kake is tantamount to environmental racism. I must question, can this timber sale be

# Comment Letter #11 - David Beebe

regarded as "Serving People?"

The claim that this timber sale is serving people only makes sense if we severely restrict the notion of what constitutes the "People". Within that special group, George W. Bush comes to mind. Even prior to his election to office by the Supreme Court, he never seemed to be able to turn a dime in the resource extraction industry without making the "other" people pay dearly while he engaged in the singular pursuit of greater wealth and power.

Mark Rey, President Bush's choice as head of the Forest Service, is surely one of those special people being served. With two decades of corporate lobbying on behalf of the timber industry under his belt, as well as his staunch advocacy for suspending or permanently nullifying environmental laws, who better than he, to be guarding America's hen house containing America's National Forest System?

This timber sale demonstrates the same shameful lack of balance as the agency leadership that oversees it. History will demonstrate the ultimate collapse of environmental integrity on the Tongass National Forest was preceded by the collapse of the moral integrity of those leaders who were trusted to "Care for the Land and Serve the People".

Beebe  
6

If this agency were truly serious about Caring for the Land and serving people, it would suspend all further incursions into roadless areas and create jobs by addressing the enormous backlog of road maintenance and failed culverts on the Tongass. It would aggressively institute fisheries and wildlife habitat restoration and mitigation resulting from previous harvest activities. It would begin an aggressive campaign to implement jobs by way of badly needed commercial pre-thinning on other areas of the Tongass.

One cannot care for the land, with any sense of conscience and read of this planning document and its agency doublespeak, and remain silent.

Dear Sir,

This agency document is appalling in regards to what is cavalierly deemed acceptable silviculture practices with attendant environmental consequences. It is hard to imagine any professional agency capable of attitudes and actions that make a travesty of its stated credo: Caring for the Land Serving People.

Beebe  
7

This document fails to address the impacts of native corporate logging on adjacent forest landscapes that have resulted in significant loss of subsistence opportunities to the residents of Kake. The impacts have already begun to register.

Beebe  
8

There is no scientific doubt that harvest activities increase landslide hazards that ultimately adversely affect salmon habitat and survival. Any silviculture practice that downplays foreseeable, preventable destruction of the publics' forest resources indicates erosion of professional principles that is deeply troubling.

It has been shown that watersheds with as little as 12% clearing for roads can have significant effects on the stability of slopes. These effects can take decades to recover from.

Almost all sediment Risk ratings in Kuiu watersheds with 20% or greater harvest levels resulted in significantly increased risks to salmon habitat. 23 different watersheds were rated with high or very high risks for sedimentation of salmon habitat due to clearcutting and roading in the watersheds, yet little has been done to assess water quality on Kuiu Island.

## Comment Letter #11 - David Beebe

The following are the particularly egregious example of reckless disregard for consequences of logging:

Unit 207 in alternatives (2,3,and 4) which ranges from 60 to 75 acres. It befuddles the mind that this agency would knowingly allow this unit in zones of extreme soil hazard (MMI 4 )involving 6 separate stream channels highly susceptible to landslides. The unit was previously designed to be a wildlife travel corridor, and harvest would eliminate high value deer and marten habitat.

Beebe  
9

Units 103d (5 acres), 103c (20 mostly high Volstrata acres),and unit 101(98 mostly high Volstrata acres) occur in the hardest hit watershed which has already had 5 landslides and lost 60% of its landscape to clearcuts. Unit 101 incurs into extreme hazard soils (MMI 4), quite likely to result in landslides. And you people propose to heap yet more destruction on this watershed and call this caring for the land?

USFS Hall of Shame:

Beebe  
10

This agency continues to highgrade volume class 6&7 disproportionate to its occurrence on the Tongass resulting in significant habitat degradation and carrying capacity.

Beebe  
11

The sediment risk index is either high or very high in five out of seven of the watersheds in the project area. Increases in risk are directly attributable to clearcut activities.

Beebe  
12

During the most recent inventory (12/'03), 57 landslides were recorded in the project area, the largest being 88 acres in size. What does this agency propose to do about this?

Beebe  
13

813 acres of volume class 6&7 of high quality deer habitat would be lost to the preferred alternative. This will result in inevitable reduction of subsistence opportunities.

The preferred alternative would have the highest impact of all action alternatives on roadless areas.

31% of low elevation deer habitat capability has already been eliminated from the harvest area.

54% of the high volume class timber of the project area would be eliminated from historic conditions if the preferred alternative were implemented.

52 acres of harvest would occur on extreme hazard soils in the preferred alternative and 160 acres of detrimental soil disturbance.

The preferred alternative would create the greatest potential for landslides.

Watershed 109-45-10090

59% has been clearcut.

5 different landslides have occurred which likely resulted in stream channel sediment loading resulting in width to depth ratios that result in poor salmon habitat.

There is no equivocation in terms of what caused this degradation of habitat:"extensive harvest, landslides and road building".

Beebe  
14

Dean Creek Watershed

It has a 30 acre landslide even though it has a very small percentage of its landscape in the high or very high Mass Movement Hazard categories

33% of the watershed has been roaded and clearcut.



# Comment Letter #11 - David Beebe

## Security Creek

12 separate landslides

16 miles of roads

26% of the watershed has been harvested

## Kadake Creek Watershed (8,188 MBF on 340 acres)

18 separate landslides

78 miles of roads

90% of the streams are either salmon spawning habitat or are streams flowing into spawning habitat.

over

410 acres of riparian areas harvested

Some stream channel characteristics have been downgraded to "Poor", but it is said that it is impossible to say if management activities were the cause

## Saginaw Creek Watershed

19 landslides

29% of the watershed has been roaded and clearcut.

Sediment Risk Rating to salmon spawning habitat boosted to Very High

Further harvest and road building activities will require going into steeper terrain with a greater risk of landslides

Coho are dying in a streambed that was destroyed by a logging road, then haphazardly "mitigated" using inappropriate fill material that allows the stream channel to disappear completely during dry periods.

A single storm event in 1988 produced most of the 19 landslides present in the Saginaw Watershed alone. Practically 3/4 of the streams in this watershed are either salmon spawning habitat or streams flowing into their spawning grounds.

Beebe  
14 contd.

When compared with other watersheds of Kuiu Island, the Saginaw Creek Watershed was rated average to below average for the proportion of slopes with high or very high Mass Wasting Hazard. Yet the agency pressed on with marching orders.

When the agency was finished caring for the land, their clearcuts catapulted the Saginaw Watershed into the 90th percentile for landslide density compared to the island's more fortunate watersheds.

Because the forest service exhausted the low elevation oldgrowth in valley bottoms and toe slopes in the late 60's and 70's, it has been forced to concentrate later harvest on mid-slopes and ridge tops. Alders now dominate many harvest areas that once supported phenomenal densities of oldgrowth spruce and hemlock.

The watershed integrity as a result, has been severely altered from a pristine, world class example of coastal temperate rainforest into an industrial landscape that puts salmon spawning and subsistence resources at the bottom of the list of imperatives. There is no excuse why multiple use objectives cannot be more balanced than this.

While the Saginaw watershed has over 20 miles of logging roads, practically 30% of its forests clearcut, a massive degree of landslides imposing high sediment risk to its world class salmon streams, the agency is still equivocal about why salmon stream attributes are now below average. On page 30 of Appendix C in the Kuiu DEIS, it is explained this way: "It is not possible to say whether below average (attributes of spawning habitat) in the East and West Forks of Saginaw Creek are due to management activities or simply a natural characteristic of these streams". What is the point of having hydrologists and fishery biologists on the IDT if they can't put as much time into causes as they do effects?

## Comment Letter #11 - David Beebe

Beebe 15 { Chapter 3-135 has an incorrect total of harvest acres for Kadake Creek Watershed. Unit cards total 340 acres. Table 3-55 has Kadake Creek total of 283 acres.

Beebe 16 { On matters of subsistence deer issues, this DEIS uses hunter deer harvest statistics as if they constituted absolute scientific fact without regarding cases of poaching and the projected impacts by high density road conditions which enhance that possibility. It disregards hunters who fail to make harvest reports.

Beebe 17 { It fails to assess predation due to wolves and bear and the impacts that will have on subsistence opportunities. It fails to account for extreme weather mortality, and assumes average weather conditions will prevail for the course of the planning period. When in reality, large portions of our planet and North America in particular are experiencing extreme aberrations in weather patterns that could have dire consequences to an already compromised environment due to timber sales such as this one. NEPA requires that this agency consider the environmental impacts of past, present and reasonably foreseeable future scenarios.

Beebe 18 { Appendix C notably excludes all mention of watershed 109-44-10370. Locations of existing landslides in the project area are also notably absent in the GIS maps and are an important feature of the landscape of the project area critical to the understanding of the consequences of harvest activities.

Beebe 19 { I recommend the no action alternative until you can demonstrate a higher regard for your professional responsibilities to the public.

Sincerely,  
David Beebe  
P.O. Box 148  
Petersburg  
AK 99833

# Response to Beebe

## **Beebe - 1**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the FEIS, to provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

## **Beebe - 2**

Concern over the acres of clearcuts on Kuiu Island is noted. However the 27,856 acres and 78 watersheds referred to are located on an island 482,101 acres in size with 163 major watersheds. Sixty four percent of the island is in non-development LUDs (Kuiu Island Landscape Assessment). Less than six percent of the island has been harvested and less than five percent of the major watersheds include any harvest.

As noted in the DEIS p.3-119 and the FEIS Chapter 3 Cumulative Effects to Watershed section, approximately 59 percent of Watershed 109-45-10090 has been harvested, but only 20 percent of the watershed has been harvested within the last 30 years. The high amount of cumulative harvest in this watershed does not mean the watershed has lost its integrity. Hydrologic recovery due to regrowth of vegetation in harvested in areas is expected to require between 10 and 30 years (DEIS p. 3-124 and FEIS Chapter 3 Cumulative Effects on Watersheds, Cumulative Watershed Effects section). Watersheds are altered by timber harvest and road building, not destroyed. The watersheds affected by the proposed project continue to produce clean water and support anadromous and resident fish populations. The watersheds are expected to continue to support these beneficial uses into the future, regardless of which alternative is selected.

## **Beebe - 3**

On p. 3-26 of the DEIS it states, "The Forest Plan contains a comprehensive conservation strategy to assure viable and well-distributed wildlife populations (Forest Plan FEIS Appendix, Volume 4, Appendix N, 1997)." The DEIS goes on to explain much of this strategy. While there is expected to be some effects from the proposed actions of each alternative, the cumulative effects listed on pp. 3-72 thru 3-74 do not identify any threats to the viability to any species from the proposed timber harvest activities.

The Conservation Strategy Review Workshop was conducted April 10-14, 2006 at the Ted Ferry Civic Center in Ketchikan Alaska. Key Findings from the workshop are listed below:

- The Conservation Strategy is still sound.
- There is a low risk of species viability problems related to Forest Plan implementation.
- Endemic species continue to be a high priority information need.
- There is good opportunity to manage habitats to emphasize production of prey species of other foods.
- Management of young-growth forests for wildlife habitat is promising, especially for species like black-tailed deer.
- There is a need to better understand the role and management of the Matrix part of the Strategy, including the role of non-National Forest System lands.
- The wildlife monitoring program needs to be updated.

### **Beebe - 4**

The large and medium old-growth reserves, of which there is approximately 25,171 acres on Kuiu Island (DEIS p. 3-26, Kuiu Island Landscape Assessment p. 4) are non-development LUDs established in the Forest Plan and are not diminished in size for development activities including timber projection. Furthermore, there is a forest-wide system of protection provided by other non-development LUDs (307,729 acres on Kuiu Island (Kuiu Island Landscape Assessment p. 4)) that maintain the integrity of the forest-wide ecosystem and provide future option for maintaining naturally occurring ecosystems.

### **Beebe - 5**

The DEIS (p. 3-4) defines what irreversible and irretrievable commitments are and further clarifies that there would be no irreversible commitment of resources from the proposed project and the expansion of rock pits would lead to an irretrievable commitment of resources within this project. The Transportation section of the DEIS (p. 3-211) addresses the need for a rock source to maintain and construct roads and while there will be no need to develop new rock quarries, existing quarries would be used and expanded.

Removing trees from the landscape does not destroy it. The landscape remains and the trees will grow back. A responsibility of the Forest Service is to identify and present all of the effects from the proposed project including irreversible commitments of resources to the public and Responsible Official.

### **Beebe - 6**

The Forest Service receives annual road maintenance monies to be used for maintenance of the road systems for the present and perceived problem areas of the road system. Petersburg Ranger District is composed of several island road systems and the annual maintenance monies are generally divided between these island systems.



## Response to Beebe

Maintenance and reconditioning of existing National Forest System (NFS) roads is an ongoing process that occurs on a periodic basis. The maintenance and reconditioning of NFS roads in the Project Area may be in the process of implementation, before, during and after the NEPA process through separate service contracts to reduce the backlog of deferred maintenance. Reconditioning roads may be done to comply with best management practices, maintain the existing infrastructure for the proposed timber sale, future harvest entries, and other National Forest management activities.

Fisheries and wildlife habitat restoration projects are ongoing within the Forest. In the planning area, the Kadake Creek tributary restoration project is ongoing and two red culverts (those that don't pass fish at all flows) will be replaced with all action alternatives. The remaining red culverts are being evaluated on a forest-wide basis for prioritization for repair or replacement.

As stated in the DEIS p. 1-6 and 3-167, of the total acres harvested in the project (approximately 10,393 acres) 4,766 have been pre-commercially thinned. The remaining 5,627 acres are not ready for pre-commercial thinning. Decisions on thinning other areas of the Tongass does not fall within the realm of this project analysis.

### **Beebe - 7**

There is no corporate land adjacent to the Project Area. There are 356 acres of non-National Forest System lands within the Project Area: two acres of private land, seven acres of Bureau of Land Management land, and 347 acres of State of Alaska land. The concern over logging on native corporate land on Kupreanof Island in relation to significant loss of subsistence opportunities for residents of Kake has been addressed in the FEIS Chapter 3 – Issue 2 Deer Habitat and Subsistence Use section. The historic and current use of Kuiu Island for subsistence deer hunting has been updated in the FEIS (see Response to OVK 4).

The scoping for this project found that there is concern that timber harvest on private lands on both Kuiu and Kupreanof Islands has had, or may have, harmful effects to deer populations on Kuiu Island. There are very few acres of State or private lands on Kuiu Island. State lands include the State Marine Park in Security Bay and two town sites in Rowan Bay and No Name Bay. There may be clearing of the Rowan Bay site in the future if the State sells lands for a town site. The No Name Bay site is part of the over-selection and is low on the priority list of lands the State will select. Harvest will most likely not occur on the remaining State lands because of the nature of the lands withdrawn.

The Sealaska Corporation owns lands on the northern portion of Kuiu in VCU 398. At this time, no harvest has occurred on these lands. These are small acreages and are not expected to have much impact to wildlife.

The harvest of private lands on Kupreanof Island around the village of Kake is extensive. The Native Corporation completing this harvest has followed the State Forestry Practices Act and has cut what is available. This large harvest area has had major impacts to deer on Kupreanof Island but probably has had little effect to Kuiu populations.

## **Beebe - 8**

The effects of harvest activities on rate of landslides are discussed in the DEIS p. 3-192 – 3-197 and 3-201 and in the FEIS Chapter 3-Soils and Geology section. A soil stability analysis was completed by a Soils Scientist for all MMI-4 soils within planned road locations and timber harvest units. All unstable slopes were avoided. However, due to the numerous concerns received, those units with MMI-4 soils were reanalyzed. Units 207, 303, and 305 (See unit cards in FEIS Appendix B) will be modified to exclude the MMI-4 soils. For Unit 101, the MMI-4 soils in the southeast corner of the unit will be removed and the area along the western edge of the unit will remain. There are no streams in this area and the risk of sedimentation delivery to a stream is very small.

## **Beebe - 9**

Soil stability analysis was completed by a Soils Scientist (and is available in the planning record) for all MMI-4 soils within planned road locations and timber harvest units, and all unstable slopes were avoided. However, due to the numerous concerns received about including these MMI-4 soils within the units, the unit boundaries have been modified (see Beebe -8 response). The potential for landslides were discussed on pages 3-199 to 3-201 of the DEIS and are discussed in the FEIS Chapter 3 – Soils and Geology section.

See Beebe-2 for the response to the concern of harvest within Watershed 109-45-10090.

## **Beebe - 10**

The DEIS analyzes the cumulative effects of harvest and road building on both deer and marten carrying capacities at the project level and the Wildlife Analysis Area (WAA) level. There was no significant habitat degradation or change to the carrying capacity of either species.

The analysis of the proportion of volume class 6 and 7 harvested and proposed for harvest has been expanded in the FEIS and the Wildlife Report. The harvest on Kuiu Island is not disproportionate to its occurrence. Currently, approximately 25 percent of the POG is coarse canopy, and all of the alternatives would retain this proportion (DEIS pg 3-158 and 3-159 and FEIS Chapter 3 – Wildlife Habitat and Timber and Vegetation section). The action alternatives would harvest between 1 and 4 percent of the coarse canopy, which would not be a significant degradation to the habitat or its carrying capacity.

## **Beebe - 11**

As the Watershed Analysis explains, there were no historical records on these streams to compare to, therefore it cannot be determined if the present conditions of these streams is due to common events, harvest or a combination thereof. As stated on p. C-19 of the DEIS: “Water quality parameters are not routinely monitored on Kuiu Island. The primary water quality parameters that can be affected by timber harvest activities are suspended sediment loads, turbidity, and stream temperature. Fuel storage on Kuiu Island also presents a potential water quality concern. All of these water quality concerns are addressed through the application of Best Management Practices (BMPs).

# Response to Beebe

A Memorandum of Agreement between Alaska Department of Environmental Conservation and USDA Forest Service documents the Forest Service's role in the Alaska Nonpoint Source Pollution Control Strategy. State Approved BMPs are the mechanism through which the Forest Service protects water quality from nonpoint source pollution. The Forest Service's implementation and monitoring of BMPs satisfies the requirements of the Alaska Nonpoint Source Pollution Control Strategy and is approved by the US EPA, thereby ensuring that USFS activities are consistent with the Clean Water Act.

## **Beebe - 12**

The landslides within the Project Area have reseeded naturally and there are no plans to do anything about them at this time. Table 3-73 in the DEIS p. 3-197 displays the number of landslides in unharvested and harvested acres. Although landslides are more likely to occur in harvested acres than unharvested acres, the planning area consists of 10,393 harvested acres and 35,709 unharvested acres. Approximately 77 percent of the planning area is unharvested area. Thirty-nine of the 57 landslides within the planning area have occurred within these unharvested areas as compared with 18 in the harvested areas. As discussed in the DEIS (p. 3-191) Swanston and Marion 1991 noted that "as a general rule, landslides in harvest areas are significantly smaller, occur at lower elevations, develop on gentler gradients and tend to travel shorter distances [than naturally induced landslides]."

## **Beebe - 13**

As indicated in the DEIS (p. 3-50) the restriction to subsistence is the low deer populations due to severe winter die-offs and the slow recovery due to high predation (see CCWF-4). Additional information added to the FEIS Chapter 3- Subsistence section states that Kake residents have pointed out that their recent (since 1975) reliance on Admiralty Island for deer hunting is not their preference, and that as the Kuiu herds increase, more of their hunting will shift back to Kuiu Island. Kake residents on average (1993 to 1995) take about 250 deer annually (TLMP Revision FEIS, Appendix H, p. H-76, based on 75% of their harvest being 185 deer). If all of these deer were harvested from Kuiu the minimum deer needed to support that demand would be 2,500 deer. Table 3-29 in the DEIS p. 3-83 shows that WAA 5012 would be able to meet this demand in all alternatives.

## **Beebe - 14**

Of the five slides that occurred within Watershed 109-45-10090, three did not reach a stream. The width-to-depth ratio for the stream draining this watershed does rate as poor when compared to the Tongass Fish Habitat Objectives; however, other indicators are rated as fair, good, and excellent (DEIS P. 3-120). Salmon habitat is not poor overall. Furthermore, width-to-depth ratios vary in nature and there is no pre-logging data available for the stream channel condition, therefore, it is not possible to determine what the width-to-depth ratio was before logging.



Dean Creek Watershed does have one slide. This slide however is not in a managed stand.

In Security Creek five of the 12 slides did not occur in harvest units. Two of the five not in harvest units were near streams.

One hundred percent of the streams in this watershed flow into salmon spawning habitat. The stream channel condition was rated as poor for pools per kilometer, however, it is not correct to say that the condition has been downgraded to poor. No pre-logging data set exists for comparison. Note that the rating for percent of channel in pool area was rated as excellent. It could be that Kadake Creek naturally has few pools, but the pools are very large. The majority of the managed stands in the watershed are outside of the project boundary. Of the entire watershed (32,270 acres) 1.1% (352 acres) had slides. Of the 18 slides within the watershed, 8 were not in harvest units.

There is no streambed in this watershed that has been destroyed by a road then haphazardly mitigated with inappropriate fill material. One hundred percent of streams in this watershed drain into salmon spawning habitat. The map on p. 3-141 shows landslide initiation points. Within the Saginaw Creek Watershed most of the landslides occurred outside of timber harvest units and away from roads, reflecting the fact that landslides are naturally occurring events in this watershed.

The Forest Plan addresses multiple-use goals and objectives through the allocation of lands to the set of Land Use Designations (Forest Plan, p. 2-2). Thus, multiple-use goals are addressed at the Forest-wide level, not at the level of individual watersheds. Within this watershed there have been 19 slides for a total of 1.5 percent of the watershed. Of the 19 slides, 11 occurred outside of harvest units and only one slide in Saginaw Creek Watershed was directly related to the 1988 storm event.

Assessments of stream channel conditions for each watershed in Appendix C in the DEIS are made without the benefit of pre-logging data. No pre-logging data on stream channel conditions are available.

Within the watershed, increased sediment may affect individual fish by reducing oxygen levels to developing eggs in spawning gravel and/or trapping of emerging fry in the gravel, however, the effect is expected to be short term (48 hours or less) and the placement of timing restrictions will minimize impacts to fish (see the road cards in Appendix B). The State of Alaska's Water Quality Standards state that the quality of a water to support propagation of fish, shellfish, and wildlife and recreation in and on the water must be protected and maintained. BMP implementation will achieve state water quality standards (FEIS Chapter3 – Fisheries, Environmental Consequences section).

### **Beebe - 15**

The table in the FEIS in Issue 4, Chapter 3 reports the correct number of acres of harvest proposed in the Kadake Creek Watershed in Alternative 4.



# Response to Beebe

## **Beebe - 16**

The FEIS and Wildlife Specialist Report describes the interaction between predators and prey and analyzes it by applying the figures used by Person (1997, 2001). There is sufficient habitat to maintain 34 deer per square miles island-wide and 29 deer per square mile WAA-wide, which is above the predicted numbers Person used in his analysis. See Response to OVK-4 and SEACC 3c

## **Beebe - 17**

The DEIS p. 3-83 Table 3-29 footnote b, shows a 36 percent reduction in the habitat capability for WAA to account for wolf predation. The Forest Service does not have reduction factor for black bear predation on deer. It is not possible to guess what the weather will be, therefore averages are used. All past, present, and reasonably foreseeable impacts were analyzed for the cumulative effects shown in Chapter 3 of the FEIS.

## **Beebe - 18**

Watershed 109-44-10370 is not analyzed in detail in Appendix C because it has had a low level of cumulative harvest. The watershed is described on p. 3-123 of the DEIS. The locations of landslides within the Project Area are depicted on map 3-8 on p. 3-141 of the DEIS. Figure 3-8 in the DEIS has been updated to make the landslides more visible.

## **Beebe - 19**

Preference for the No-Action Alternative is noted.

# Comment Letter #12 – Edna L. Jackson

**Edna L. Jackson**  
512 Keku Road  
P.O. Box 163  
Kake, Alaska 99380

March 19, 2006

Kris Rutledge, Team Leader  
USDA Forest Service  
P.O. Box 1328  
Petersburg, Alaska 99833

RE: Kuiu Timber Sale

Dear Ms. Rutledge:

I have lived in Kake nearly my whole life. My family on my father's side is from Saginaw Bay. Although my mother is not originally from Kake, she was adopted by a family that is also from Saginaw Bay, so I have cultural roots to North Kuiu Island that go way back on my tribal family's side and my father's family's side. When I was a small girl, my father used to take our family out to North Kuiu for fishing and gathering, the same as his father before him, and I am sure the same for many generations before that. As I grew into adulthood, my husband and I did the same with our own family. Our grandson's name is tied directly to a cliff in Saginaw Bay.

North Kuiu Island has been an important customary and traditional use area for myself and my family. We fish for halibut and snapper, we gather black and red ribbon seaweed, we dig for clams, we gather gumboots. We pick tea and berries, gather devil's club bark for medicine. My husband and his brothers make a special trip for the last dog salmon of the year from Security Bay. We get not only physical sustenance from the area but spiritual sustenance as well because that area is where, according to our oral history, Raven created a small Nass River when he became homesick, that is where Raven tracks are locked in stone, and where Raven's beads are scattered. The US Forest Service looks at the same area and sees so many mbf per acre, or suitable forest land or unsuitable forest land. And it's business as usual, as the Forest Service continues to propose timber sales that completely fail to accommodate Kake residents' concerns. Or sales that are even economical...how many timber sales are sitting on the shelf with no bidders because of the present timber market.

In *NRDC v. USFS*, the 9<sup>th</sup> Circuit Court of Appeals found fundamental defects in the 1997 Tongass Forest Plan based on the substantial error made by the Forest Service in estimating the market demand for Tongass Timber. As the court explained, this error "fatally infected [the agency's] balance of the economic and environmental considerations..." *NRDC v. USFS*, 421 F.3d797, 816 (9<sup>th</sup> Cir. 2005). The court directed the Forest Service to revise the Tongass Forest Plan. Until that court-mandated revision is complete, I would recommend the Forest Service stop all planning activities related to the Kuiu Timber Sale project.

Edna L. Jackson Letter to US Forest Service  
RE: Kuiu Island Timber Sale  
Page 1 of 2

## Comment Letter #12 – Edna L. Jackson

Industrial scale logging on my ancestral land has been going on since the early 1960's with Pentilla Logging, Soderburg Logging, and prior to that, high-grade spruce logging during WWII. Give North Kuiu Island some time to recover.

EJ - 3

OVK hunters' customary and traditional activities are significantly restricted when our nephews have to travel further from home to hunt deer at a time of year with dangerous and life-threatening weather conditions. I don't need to remind you that two years ago, our little community lost three hunters attempting to make the 24 mile run across Frederick Sound to Admiralty Island for deer. One young man was my neighbor, the other two were a father and son who lived just two houses away from me. Perhaps they would still be with us today had they not needed to travel so far for their deer hunting.

I would like to point out that the US Forest Service is using an outdated community profile in the DEIS. In 2003, the reported population for Kake was 682 residents (DEIS, 3-76). The current population of Kake is Table 3-92, identifying Kake's population at 663 in 2004. In the last two years, however, Kake's population has dropped over 12 percent to 598.

The description of Kake's employment and income is also inaccurate and outdated. The DEIS states that seafood processing at Kake Foods "contribute[s] considerably to the economy." Unfortunately, the Kake Foods has not operated at all in the past two years; tribal members are forced to seek seasonal employment in Petersburg and Sitka, returning home when these seasonal jobs are over.

EJ - 4

The DEIS also references employment of residents logging on village and regional corporation lands. Two summers ago, Kake Tribal sold all its logging equipment, so logging jobs are minimal at best. Logging by the regional corporation employed less than a dozen local men last year for a very short season. Some of our local men worked at these jobs but eventually left Kake to work in Kensington Mine because of the few hours they were even called to work. I suspect there will be even fewer logging jobs by our regional Corporation, as their subcontractor brought in ten migrant workers last month.

Anyway, I am pointing this out to you to show that we are real people here that your decisions affect; have the courtesy to use current information, please. For the U.S. Forest Service to use outdated and incomplete information makes its attempt to evaluate the human health and environmental effects of the proposed action arbitrary. While the DEIS attempts to evaluate the social and economic effects of the proposed Kuiu timber sale on Kake, it completely fails to consider how past and future significant impacts to customary and traditional activities in the project are impacting the cultural and social lives of OVK members.

The environmental justice analysis contained in the DEIS fails to disclose current unemployment statistics for Kake, compare the median incomes of Kake households with the regional medium, evaluate the access of residents to potential jobs. Kake is classified as a "distressed" community due to the dire economic situation. There is no reflection of this in your DEIS.

Edna L. Jackson Letter to US Forest Service  
RE: Kuiu Island Timber Sale  
7-2-07

## Comment Letter #12 - Edna L. Jackson

During times of economic downfall, tribal membership depend even more so on gathering of customary and traditional foods, and there is no reflection of this in your DEIS.

I am opposed to further logging on north Kuiu Island. There has been more than enough industrial scale logging on North Kuiu Island. Let the fish and wildlife habitat and watersheds have some time to recover. This directly impacts our customary and traditional gathering. I prefer the No-Action Alternative, Alternative A.

Thank you for your attention.

Regards,



Edna L. Jackson

EJ - 5



# Response to Edna L. Jackson

## **EJ - 1**

The Forest Service acknowledges that these are customary and traditional use areas.

## **EJ - 2**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the DEIS, to provide a steady flow of timber harvest volume timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

## **EJ - 3**

The Forest Service acknowledges the grief regarding the loss of three hunters from Kake and recognizes that the deer population on Kuiu Island has not returned to historic levels since the severe winter die-off in the late 60's and early 70's, which forces Kake hunters to travel farther than they might otherwise.

## **EJ - 4**

The FEIS has been updated to include current population estimates and the following income and employment information.

U.S. Census data for Year 2000 shows the median household income was \$39,643, per capita income was \$17,411, and 14.61 percent of residents were living below the poverty level.

A letter dated February 2006 from the Denali Commission confirmed Kake's classification as a distressed community. Based on 2003 data, the Denali Commission estimates Kake average market income as below the \$14,872 threshold level and that more than 70% of residents age 16 and over earned less than the threshold.

The FEIS has been updated as much as possible; the following sites were used as sources:

6. Alaska Department of Commerce, Community and Economic Development community database ([www.dced.state.ak.us](http://www.dced.state.ak.us)),

## Response to Edna L. Jackson

7. the Denali Commission website ([www.denali.gov](http://www.denali.gov)),
8. the Kake Community Economic Development Strategy (2004) (the page provided),
9. the U.S. Census Bureau, Census 2000 (<http://censtats.census.gov/pub/Profiles.shtml>) and
10. Personal communication with Kake Schools, OVK, the City of Kake and Jeannie Monk (Denali Commission).

The Forest Service has noted that Kake Foods has not operated in the past two years and that Kake Tribal recently sold all its logging equipment. The Forest Service also acknowledges that as income has dropped, reliance on subsistence has increased. The FEIS Environmental Justice section has been expanded to recognize the above-mentioned condition in Kake and acknowledge that, during times of economic hardship, tribal membership depends even more on gathering of customary and traditional foods. It was also noted that the project is not expected to make conditions worse and there may be some opportunities for employment as a result of the project.

### **EJ - 5**

Preference for the No-Action Alternative (Alternative A) is noted.

# Comment Letter # 13 – Katie Fearer

kfearer@myuw.net

03/20/2006 10:42 AM

To :Comments-alaska-tongass-petersburg@fs.fed.us

cc:

Subject: Kuiu Timber Sale

I am commenting on the proposed Kuiu Timber Sale, which includes parts of Kadake Creek and other areas in the Kadake Bay watershed.

KF - 1 { I urge the Forest Service to select the "no action" alternative to the sale.

KF - 2 { I have traveled to Kadake Bay and have enjoyed fishing, wildlife watching, and hiking along Kadake Creek. I am drawn to the area because it is relatively undisturbed and supports a high-density population of black bears, along with wolves, moose, Sitka black-tailed deer, and course, salmon.

KF - 2 { It is my understanding that the Tongass Fish and Wildlife Resource Assessment (ADF&G, 1998) identified Kadake Creek as a primary sportfish producer and one of 19 "high value" watersheds in Southeast Alaska. It is also my understanding that in 1997 the Forest Service recommended 23 miles of Kadake Creek as a recreational river under the Wild and Scenic River Act because of its high historic, recreation, and fisheries values.

KF - 3 { I do not believe that the demand that exists for Tongass timber justifies logging this pristine area. According to a ruling by the 9th Circuit in 2005, the Tongass Forest Plan's estimates of the demand for Tongass timber are misleading, because they erroneously doubled the market demand for the timber. It is also my understanding that the Forest Service's logging program in Southeast Alaska loses millions of dollars every year.

Considering the adverse environmental and economic impacts of the proposed sale, I oppose it.

Thank you for considering my comments.

Katie Fearer  
2425 SW Webster St., Apt. E-4  
Seattle, WA 98106

# Comment Letter #13 – Katie Fearer

## **KF - 1**

Preference for Alternative 1, the No-Action Alternative, has been noted.

## **KF - 2**

Most cultural, historical, recreational, fish and wildlife values of the Kadake watershed are concentrated at the mouth of Kadake Creek and within the riparian buffer of the creek itself (TLMP FEIS, Appendix, Vol. 2, pp E-251-254). None of the proposed harvest units or roads would be within these areas. The Kadake Creek Recreational River LUD contains 6,585 acres. Suitable forested land is available for harvest within the Recreational River LUD if the adjacent Land Use Designation allows timber harvest (Forest Plan p. 3-118) as is the case in the Kuiu Project Area (see Unit Cards Appendix B pp. B-83 and B-85). Alternatives 1, 3, and 5 do not propose any harvest within the Recreational River LUD. Alternative 2 proposes 18 acres of partial timber harvest within the ½ mile wide river corridor and Alternative 4 proposes 49 acres of partial harvest. See also Greenpeace Response #41.

## **KF - 3**

There are several interpretations of pristine, however, this area already has a road structure and has been logged in the past and is therefore not pristine. It is because of the existing roads and infrastructure that this area is a good place for harvesting, as the existing infrastructure helps keep the high cost of road construction to a minimum.

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the FEIS, to provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

The Forest Service does not lose millions of dollars yearly with the logging program; however, the Forest Service is not mandated to make money by offering timber for sale, either. This point is further emphasized in the Forest Supervisor's declaration, where it states:

There is no legal mandate for the Forest Service to generate a profit. The Timber program is not unusual in costing more to operate than the government receives in revenues for the program. Many programs on the Tongass National Forest generate no revenue, including the subsistence, heritage, inventory, and



## Response to Fearer

monitoring, land management planning, geology, fish and wildlife management, trail improvements, and fire protection programs. The Tongass National Forest produces the majority of wildlife and fish for commercial, sport, and subsistence users in Southeast Alaska, yet receives no returns on its investments (Cole, 2006).

Attn: Kris Rutledge  
Team Leader  
Box 1328  
Petersburg, AK 99833

## Kuiu Draft EIS Comments and Concerns

### 1. Harvest Unit Volume Estimates

Timber harvest economics is a significant issue identified in this DEIS (pages S-11, 1-19, 3-97 to 3-111). The NEPA Economic Analysis Tool (NEAT) is used to present the economic evaluation of harvesting specific units. Outputs from the NEAT include the expected bid, and the number of potential jobs created, to name a few. Since some outputs are based on the unit volume per acre and expressed in monetary terms it is reasonable to use the volumes and tree species composition actually measured within the existing harvest units. This is the best estimate of the actual volumes believed to exist in the project area.

The NEAT model typically uses a weighted average of volume per acre that is unlikely to represent the true volumes contained within the specific harvest units comprising a portion of the total volume estimate. Therefore all of the outputs created from the model can be deceiving if weighted averages are used in the NEAT. This is especially true when there are harvest units identified in volume classes 6 and 7, since these stands can possibly contain substantially more or less volume per acre than shown on the unit card estimates in the DEIS.

Timber harvest economics is an important issue; the best science used to determine the economic benefits derived from this harvest proposal are obtained from specific measurements taken within these specific harvest units, not by using a weighted average taken from all or a portion of those units. Please use the actual volumes measured in this analysis.

### 2. Important Deer Winter Range

On page 3-53 of the DEIS it states that important deer winter range is determined and described as part of an agreement between the State of Alaska and the Forest Service. This document is a Memorandum of Understanding (MOU) between the two agencies. Attachment 1 of this MOU refers to information needed by the State to review timber sale proposals. This MOU does not describe, evaluate, or mention important deer winter range. The information requested is a map displaying all deer winter range in the project area distinguished by quartile. This is contrary to the wording on page 3-53 of the DEIS.

Impacts to Sitka black-tailed deer habitat is a common concern in most timber harvest projects, especially those projects located on the southern half of the Forest. It is critical

## Comment Letter #14 – Glen Ith

that a consistent method is developed to determine important deer winter range.

Important deer winter range is not specifically defined or clarified in the Forest Plan, which may be the source of this concern; leading to many methods to identify and evaluated impacts to important deer winter range. This project is no exception; it uses the historic conditions (acres) existing within the WAA to determine this habitat. The Scott Peak FEIS used the historic conditions within the ecological subsection for identification of this habitat type. The Overlook EA uses the current conditions in the WAA. These three examples illustrate current inconsistencies in methods used to determine important deer winter range.

The terminology used to identify important deer winter range is also inconsistent throughout this DEIS. The term “**High value winter range**” is used on page 1-18, “**high value deer habitat**” is used on page 1-9, “**critical winter range**” is used on page 3-23, and finally “**important deer winter range**” is used on page 3-28. Apparently all four of these terms are supposed to represent the same habitat type, yet this is left for the reader to assume. These differences in terminology may at first seem trivial but they make the document confusing to the readers that may possess a general understanding of deer habitat relationships. These differences in terminology become infuriating to a reader possessing a rich understanding of these important relationships.

The four terms highlighted above vary substantially in their meaning. “High value deer habitat” could represent summer range; especially areas located in sub-alpine regions of the project area where high concentrations of preferred deer browse species occur. These areas may be important for preparing and storing energy for deer to survive extreme, prolonged winter conditions, but these high elevation areas are not typically utilized during the winter months due to snow conditions in typical winters. The high value deer habitat utilized in summer in both sub-alpine and young growth stands may not be directly related to “important deer winter range”.

Changes in deer winter habitat capability numbers are the recognized means used on the Tongass National Forest to determine impacts to deer habitat. Deer and marten are used as MIS in this proposal and habitat capability is used to express the value and impacts to habitat. Habitat capability for deer and marten is expressed as the potential number of animals that can be supported within an area of evaluation. Habitat capability is also indirectly related to subsistence use, since the Forest Plan FEIS assumes that reductions of 10 to 20 percent habitat capability within WAAs may potentially result in reduced deer population viability, possibly leading to subsistence restrictions in some areas.

It is reasonable that important deer winter range be based on quartiles broken down by habitat capability. This would be meaningful since the upper quartile would represent 25% of the entire habitat capability in the preharvest condition in the WAA, regardless of how many acres make up this quartile. This method would also clearly display that further reductions in this specific habitat type would have disproportional impacts to total habitat capability. In this DEIS thousands of additional acres are shown as important deer winter range and impacts to these areas are washed out by the sheer amount of habitat.

Ith – 2d

Please use the final output from the deer winter habitat capability model to determine important deer winter range in the project area. This forth quartile would represent 25% of the total habitat capability that once existed in the pre-harvest condition in the associated WAA. This method would also present an important threshold, since large reductions from past harvest activities in this habitat type would raise a red flag for expressing potential limited deer subsistence resource in the project area.


### **3. Impacts to Marten Winter Habitat Capability Due to Road Density**

The impacts to marten winter habitat capability due to open road density are not shown in this DEIS. Marten are a species at risk for local population reductions as a result of past road building and timber harvest activities. Open road density is a component of the marten winter habitat capability model as discussed on pages 3-44 and 3-45. This component of the 1991 model was not revised in the most recent revision of the Forest Plan.

Ith - 3

A large reduction in marten habitat capability is not displayed or disclosed between the historical and existing conditions within the project area caused by open high open road densities. This component of the model is quite similar to the reduction in deer winter habitat capability due to wolf predation (a 36% reduction). The difference is that road density in the marten winter habitat capability model reflects improved accessibility to marten trappers, a known source of high marten mortality. Please include this important component of the model in the Final EIS.

Thank you for the opportunity to comment on this proposal.

  
/s/ Glen Ith  
Box 1612  
Petersburg, AK 99833  
March 19, 2006



# Response to lth

## **lth - 1**

The inventory done on this FEIS for the economic analysis is designed to be used as a Project Area average and not on an individual unit basis.

Timber cruise plot surveys conducted within the planning area were used to derive the average volumes and tree species composition used in NEAT and NEAT\_R. It is neither required nor practical to cruise all the units at this point in the sale program as all units are not included in all alternatives and may not be selected for harvest.

## **lth - 2a**

The DEIS p. 3-53 states that the “results were generated using the quartile model developed by the Forest Service and the State of Alaska as means of describing important deer winter range.” The methods to develop the quartiles mentioned above are what was being referred to on page 3-53. The MOU (Agreement No. 00MOU-111001-026 Attachment 1 p. 1 states “All deer winter range in Project Area (that scores above 0 in most recent interagency approved version of deer HSI model) distinguished by quartile (i.e. by 25% of acres).” This has been clarified in the FEIS.

## **lth - 2b**

Analysis within the FEIS Chapter 3 Wildlife Habitat and Subsistence Uses section includes comparisons between past, present and reasonably foreseeable future important deer winter range by alternative. Important deer winter range was derived from the historic condition of WAA 5012 and quartiles were developed based on total acres of Habitat Suitability Indices (HSI) >0 within this area of analysis, as directed in the May 25, 2005 Forest Supervisor’s letter (Cole 2005). The appropriate scale of analysis to develop HSI values for this project was the Wildlife Analysis Area (WAA) level in order to compare the quartile analysis with the Forest Plan analysis.

## **lth - 2c**

Although the meanings of the different terminology used to refer to deer winter range were the same, it is understandable how this could be confusing. The terminology in the FEIS has been changed to be more consistent.

## **lth - 2d**

The methods used to determine the quartiles for the important deer winter range are addressed in the Forrest Cole letter of May 25, 2005, in the wildlife section of the Annual Monitoring & Evaluation Report for FY 2000, and the MOU Agreement No. 00MOU-111001-026 Attachment 1 p. 1 as mentioned above.

## **lth - 3**

The discussion of road density has been expanded to include both open and closed road densities and the accessibility of closed roads for OHV use in conjunction to marten trapping. The road density factor (90% reduction) was discussed in an earlier model (Suring et al. 1992) but was not added then or in the current marten model (Version 7.0). A discussion is available in the Wildlife Specialists Report.

As discussed in the DEIS and the FEIS, the road accessibility would be short-term, which is defined as over the life of the timber sale, and the overall cumulative effects of the action alternatives is a decrease in open road densities within the planning area.

# Comment Letter # 15 – John Kober



John Kober  
<johnkober@mac.com>

03/20/2006 08:41 AM

To: Comments-alaska-tongass-petersburg@fs.fed.us  
cc:  
Subject: Kuiu Timber Sale

I am writing to comment on the proposed timber sale on Kuiu Island.

Given the economic value of Kadake Creek as one of SE Alaska's most prolific salmon and steelhead streams I do not support any clearcutting or road building, including temporary roads, in the Kadake Creek watershed. The Forest Service itself has acknowledged the significance of Kadake Creek when it recommended that 23 miles be designated under the Wild and Scenic River Act because of it's recreation and fisheries value.

Kober - 1

I have fished Kadake Creek several times and have flown over Kuiu Island and have seen that the Island has already been heavily logged and clearcut. More logging or road building will only serve to threaten the recreation and fisheries value of the Kadake Creek drainage and I would urge you to adopt Alternative 1, the No Action Alternative.

Kober - 2

On my visits to Kuiu Island I have had the great opportunity and fortune to stay at the Forest Service cabin on Kadake Bay. This site offers huge recreation, fishing and hunting opportunity while still providing solitude. I am very glad to hear the Forest Service plans to upgrade this cabin. However, I am disturbed to learn that the

Kober - 3

Service plans to eliminate needed maintenance and/or close some public use cabins due to a \$300,000 budget shortfall. How can the Forest Service ignore the large public benefits these cabins provide while still proposing timber sales that have been proven to loose money?

Kober - 4

The economic costs of continuing to loose money on remote timer sales that require additional road building is not a good use of the public resource. The Forest Service would better serve the public taxpayers if it would concentrate timber sales in less remote places that do not need further road building and do not loose money. It should not close public use cabins that provide some of the highest public benefits. Rather the Service could reduce the number of timber sales that loose money and apply these savings to support great programs like the public use cabin system.

Kober - 5

I do not want to see any cabin closures and do not support the proposed timber sale on Kuiu Island.

Thank you,  
John Kober

-----  
John Kober  
6037 44th Ave SW  
Seattle, WA 98136  
(206) 778-0883  
johnkober@mac.com  
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## **Kober - 1**

The Forest Service acknowledges the importance of Kadake Creek and Bay. There are no proposed activities within Kadake Bay and the activities planned within Kadake Creek Watershed are consistent with the expectations for the Timber Land Use Designation (LUD) and the Kadake Creek Recreational River LUD (Forest Plan p. 3-118).

## **Kober - 2**

Most recreational and fish values of the Kadake watershed are concentrated at the mouth of Kadake Creek and within the riparian buffer of the creek itself (Forest Plan, Vol.2, pp E-251-254). None of the proposed harvest units or roads would be within these areas. The fisheries values of Kadake Creek are not expected to change with the proposed project activities (DEIS p. 3-182).

## **Kober - 3**

Preference for Alternative 1 - the No Action Alternative is noted.

## **Kober - 4**

While the comment regarding the Kadake Creek Cabin and other cabins on the Tongass is outside the scope of the Kuiu Timber Sale, it will be shared with the staff in charge of cabins. The funds for the Forest Service are allocated by Congress and the amount of money allocated to each resource cannot simply be transferred back and forth. The Forest Service is undergoing a 5 year evaluation process with its public use cabins and is decommissioning those that cannot be maintained to standard. One cabin in the Petersburg Ranger District is being decommissioned this year due to lack of use and the inability to maintain to standard, and it is a cabin that has been unavailable to the public for over 10 years.

The Forest Service is not mandated to make money by offering timber for sale. This point is further emphasized in the Forest Supervisor's 2006 declaration, where it states:

There is no legal mandate for the Forest Service to generate a profit. The Timber program is not unusual in costing more to operate than the government receives in revenues for the program. Many programs on the Tongass National Forest generate no revenue, including the subsistence, heritage, inventory and monitoring, land management planning, geology, fish and wildlife management, trail improvements, and fire protection programs. The Tongass National Forest produces the majority of wildlife and fish for commercial, sport, and subsistence users in Southeast Alaska, yet receives no returns on its investments. The Tongass provides cabins for recreational purposes in semi-remote and remote locations of the Forest. The returns on these investments do not cover annual maintenance costs of the facilities (Cole, 2006).



# Response to Kober

## **Kober - 5**

The Forest Service is directed to sell commercial timber sales at not less than appraised rates. Some of the road building for this project is for temporary road construction, which is a part of the bidder's costs and is not paid for by the Forest Service.

The aversion to timber sales located in remote areas has been noted. However, this area has an existing infrastructure of roads and log transfer facilities and is not considered remote.

Appendix A of the Kuiu Timber Sale Area DEIS states that the Forest Service should "...concentrate timber sales in less remote places that do not need further road building and do not lose money." Subject to appropriations and applicable law, including the National Forest Management Act, section 101 of the TTRA directs the Secretary of Agriculture, to the extent consistent with providing for multiple use and sustained yield of all renewable resources, to "seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle."

The location of timber sale projects is based first on the land allocation decisions in the Forest Plan. Under the 1997 Forest Plan, lands designated for possible timber harvest are in the development land use designations (LUDs), primarily the Timber Production, Modified Landscape, and Scenic Viewshed Land Use Designations. The second consideration is the suitability of the land for timber production. Keeping in mind all of the competing management issues across the forest, the decision to propose a timber sale in the Kuiu area is based on: the consideration of cumulative effects on other resources from past harvest activities, the location of timber sales under contract, and the eventual use of all suitable and scheduled lands for timber sale projects.

# Comment Letter #16 – Mike A. Jackson

Mike A. Jackson  
PO Box 163, 512 Keku Road  
Kake, Alaska 99830  
Phone: (907) 785-4177

March 19, 2006

Kris Rutledge, Team Leader  
USDA Forest Service  
PO Box 1328  
Petersburg, Alaska 99833

Re: Kuiu Timber Sale Draft EIS

Dear Ms. Rutledge,

I was born here in Kake and have lived here in Kake all of my life, except for going out to Oregon to get my Forest Management Degree. I got married here, raised my daughter here and now she has two children that she is raising here in Kake. My father was born here and his mother was born in Saginaw Bay, Kuiu Island in the 1800's, just like my great-grandparents and theirs before them. My family has camped and will continue to camp in various bays and watersheds on Kuiu Island, just like my ancestors. I am opposed to any further logging on Kuiu Island.

MAJ  
1

When I was a child my family, along with most of the village would move out to Cornwallis Point fish camp, and spend most of the spring and part of the summer there. Other Kake residents went to Kadake's Bay, Security Bay, Rowan Bay, Washington Bay, Bay of Pillars, Tebenkof Bay, Port Camden Bay, High Island, Kushneahin Creek, Three Mile Arm, Boulder Point, and many other bays and creeks to help supplement their income earned from working at seasonal canneries and various fisheries. During the winter I remember my grandfathers, my father, his brothers and other men from Kake going out to these same bays and watersheds to trap all of November and part of December, come home for Christmas and leave for three more months, coming home just to visit and restock supplies and leave again. I helped my father and seven brothers prepare the 700 mink and martin traps, 100 otter traps and 50 wolf traps.

I raised my daughter, whose original clan village was located in Saginaw, to respect the place that she lives and comes from, but it is difficult to see the continued industrial logging on private and US Forest Service land, the land that we come from. The current village of Kake was originally located on Northern Kuiu Island, we only moved here for safety reasons, in the past 200 years. The old Kuiu village site went through two floods, and the original village site is under water, and the original creek that sustained the village is now a small stream, it's watershed was changed during the last great flood. The present village of Kake always was a village site for all the clans that lived around the Kake area, it was the place for gathering to make peace, hold sacred ceremonies, and plan events that would involve the whole Tribe.

## Comment Letter #16 – Mike A. Jackson

Mike A. Jackson Letter on Kuiu Timber Sale  
Draft EIS  
Page 2 of 3

MAJ 2 I grew up following in my father's footsteps using Kuiu Islands for customary & traditional gathering (subsistence). My family still gathers from the same sites that our ancestors have and we still acknowledge the sacred sites and practice our Indigenous Religion in areas that we have been taught to. It is hard to share our sacred sites with the US Forest Service because they may be shared with the public for educational and scientific purposes. We continue to gather and camp on Kuiu Island, its shoreline and water that surrounds the island. I am concerned about the continued sedimentation caused by building roads, logging and log transfer sites. The Kuiu Island Draft EIS (DEIS) states that the logging plan will contribute more sedimentation to the already disturbed watersheds, affecting the fisheries that we depend on. We use some of the following bays for subsistence gathering: Port Camden, Security Bay, Kadake Bay, and other bays and watersheds to fish for Coho and Dog Salmon. The EIS also states that logging is necessary even though the EIS also sites that the subsistence gathering of the Kake people will be significantly impacted by the logging, primary the impact on deer populations.

MAJ 3  
MAJ 4 The US Forest Service (USFS) uses their notices of open house for proposed timber sales and subsistence meetings as the only notification to Kake that they are going into log a certain area. I took part of a USFS meeting when I was in high school, here in Kake, when the USFS told the community it was going to log our watershed with a balloon system, a system they help subsidize. With Kake Tribal, Sealaska and the USFS logging our watershed we are lucky to still have potable water. I would like the USFS to do meaningful consultation with the Organized Village of Kake, on a government-to-government level, to plan for a sustainable, small, local logging for the small local sawmills along the existing road system on Kuiu/Kupreanof Island, and help subsidize them as much as they subsidize the large logging and mill companies. In fact, I recommend the USFS to give all the money used to subsidize the faltering large logging and mill companies to all the rural communities in SE Alaska and watch the communities build a local sustainable program that would employ more forest workers than the few that the large companies employ. I would like to see all the USFS employees continue to help this new sustainable rural forest companies/co-ops, in fact I would wager that the USFS on the Tongass would be the most popular landlord in the nation. Granted some communities will not want to develop or continue the logging around their villages.

MAJ 5 In the recent NRDC v. USFS, the 9<sup>th</sup> Circuit Court of Appeals found fundamental defects in the 1997 Tongass Forest Plan based on the substantial error made by the USFS in estimating the market demand for Tongass Timber. The Court directed the USFS to revise the Tongass Forest Plan, with that; I suggest that the USFS not advertise any more timber sales until a new Forest Plan is done.

MAJ 6 Three subsistence hunters from Kake died on January 1, 2004 trying to cross Fredrick Sound from Admiralty Island. Kake subsistence hunters have been displaced from hunting in the safe inter-islands of Kupreanof and Kuiu Islands by the cumulative effects of logging by the USFS. Today hunters still have to cross Fredrick Sound to subsistence hunt. The Denali Commission of Alaska wrote to Kenneth Brewer, President/CEO of the



## Comment Letter #16 – Mike A. Jackson

Mike A. Jackson Letter on Kuiu Timber Sale

Draft EIS

Page 3 of 3

MAJ  
6 contd.

SEARHC Hospitals in Sitka and Juneau, dated February 13, 2006 is attached, stating that **Kake is a “distressed” community under the Denali Commission’s Code. Your Kuiu Island Draft EIS contains old employment statistics; I demand that the USFS update its section on employment that is over two years old!**

As stated at the beginning I am opposed to any further industrial size logging on Kuiu Island, that would make me favor your Alternative A in the Kuiu Timber Sale Draft EIS.

Sincerely,



Mike A. Jackson



# Response to Mike A. Jackson

## **MAJ - 1**

Opposition to any further logging on Kuiu Island is noted.

## **MAJ - 2**

The Forest Service acknowledges that much of Kuiu Island is a customary and traditional use area for people from Kake. During the Alaska Wilderness, Recreation and Tourism (AWRTR v. Morrison Settlement Agreement) Workshops held at Kake, many areas formerly open to commercial timber harvest received special protection in the Forest Plan. Examples of these areas include: Rocky Pass, Pillar Bay, Kadake Creek, Fall Dog Creek, the Red Cedar Area. All beach and estuary areas are protected with the 1000 foot beach/estuary buffer.

## **MAJ - 3**

The Kuiu Timber Sale DEIS (p.3-182) states that there will be temporary increases in sediment delivery to streams, primarily due to road construction activities. The FEIS has been updated to clarify the 'temporary increases' as sediment levels are expected to return to normal within 48 hours of the completion of construction work. These temporary increases in sediment are not expected to significantly degrade water quality or fish habitat. The streams are expected to continue to support the fisheries on which subsistence users depend. Port Camden, Security Bay, and Kadake Bay are not expected to be affected by this project. Current conditions of Rowan Bay and Saginaw Bay are described in the DEIS (p. 3-180 and 3-181). The project will use either the existing Rowan Bay or Saginaw Bay LTFs. Logs will likely be barged from the sites, although there is a possibility logs will be placed into the water and rafted for towing from the bays. Barging logs will not increase bark accumulation at either site. Log rafting will cause newly dislodged bark to accumulate at the sites. Annual monitoring will determine the amount of accumulation, if any, and trigger cleanup if accumulation exceeds Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit requirements.

The DEIS (p. 3-95 and 3-269) states that the potential foreseeable effects from the action alternatives in the Kuiu Timber Sale Area are not expected to result in a significant restriction of subsistence uses of Sitka black-tailed deer, black bear, moose, furbearers, marine mammals, upland birds, water fowl, salmon, other finfish, shellfish, or other foods.

## **MAJ - 4**

The Forest Service attempted to involve as many people as possible in the planning efforts. As early as February of 2004, scoping letters were sent to City and Tribal governments and interested citizens of Kake. That letter signified the beginning of the planning process and desire for input. Open houses were held in July and November of 2004 in which additional input to the proposals was solicited. A subsistence hearing was held in March of 2006. Information about the open houses and subsistence hearings was sent out on the scanner, by newspapers and posted on bulletin boards in town.

## Response to Mike A. Jackson

On November 22, 2004, several members of the Kuiu Timber Sale planning team accompanied Patricia Grantham, Petersburg District Ranger, to Kake. The Forest Service group met with Henrich Kadake, Sr., OVK President, and other OVK members, where the Kuiu Timber sale was discussed including a presentation of the SHPO report.

The Forest Service is currently planning a timber sale on Kupreanof Island that will consider timber sale opportunities for small-scale operators. Due to the expense of mobilization to and from Kuiu Island, lack of any local processing facilities, and the distance to established processing facilities it is unlikely that an operator will be interested in purchasing timber sale offerings with volumes less than 1,000 MBF from this Project Area (DEIS Chapter 3 p. 3-105 and the FEIS Chapter 3-Timber Sale Economics section). It is not the policy of the Tongass National Forest to subsidize sawmills large or small.

### **MAJ - 5**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." As described more fully in Appendix A of the FEIS, to provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

### **MAJ - 6**

The Forest Service acknowledges the loss of three hunters from Kake and recognizes that deer populations on Kuiu Island have not returned to historic levels since the die off in the late 60's and early 70's, which forces hunters to travel farther than they might otherwise.

The FEIS has been updated to include current population estimates and used the following income and employment information.

U.S. Census data for Year 2000 shows the median household income was \$39,643, per capita income was \$17,411, and that 14.61 percent of residents were living below the poverty level.

A letter dated February 2006 from the Denali Commission confirmed Kake's classification as a distressed community. Based on 2003 data, the Denali

## Response to Mike A. Jackson

Commission estimates Kake average market income as below the \$14, 872 threshold level and that more than 70% of residents age 16 and over earned less than the threshold.

The FEIS has been updated as much as possible with the following sites used as sources:

11. Alaska Department of Commerce, Community and Economic Development community database ([www.dced.state.ak.us](http://www.dced.state.ak.us)),
12. Denali Commission website ([www.denali.gov](http://www.denali.gov)),
13. Kake Community Economic Development Strategy (2004) (the page provided)
14. U.S. Census Bureau, Census 2000 (<http://censtats.census.gov/pub/Profiles.shtml>)
15. personal communication with Kake Schools, OVK, the City and Jeannie Monk (Denali Commission).

The Forest Service notes that Kake Foods has not operated in the past two years and that Kake Tribal has recently sold all of its logging equipment. The Forest Service also acknowledges that as income has dropped, reliance on subsistence has increased. The FEIS Environmental Justice section has been expanded to recognize the above-mentioned condition in Kake and acknowledge that during times of economic hardship tribal members depend even more on the gathering of customary and traditional foods. This project is not expected to make conditions worse, and there may be some opportunities for employment as a result of the project.

# Comment Letter #17 – Steve Mashuda

Steve Mashuda  
1000 25<sup>th</sup> Ave. E  
Seattle, WA 98112  
[grizmer@aol.co](mailto:grizmer@aol.co)  
(206) 322-7932

March 20, 2006

*Via electronic mail*

Kris Rutledge, Team Leader Attn: Kuiu  
Timber Sale USDA Forest Service  
P.O. Box 1328 Petersburg, AK 99833

## **RE: Kuiu Timber Sale DEIS**

Dear Kris:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (“DEIS”) for the Forest Service’s proposed Kuiu timber sale. The action alternatives propose logging between 14.6 million board feet of timber from 491 acres to 42.65 MMBF from 1,425 acres from the Kuiu Timber Sale Area on north Kuiu Island. Each of the action alternatives includes a significant amount of clearcutting in several watersheds, including Kadake Creek, Saginaw Bay, Rowan Bay, and Security Bay. I write to urge the Forest Service to adopt Alternative 1, the “No Action” alternative. I write with special emphasis on the place I know best, the Kadake Creek watershed.

Mashuda  
1

Over the past five years, I have come to treasure Kuiu Island, making the trek from Seattle via Petersburg a number of times to fish for steelhead and coho salmon, dolly varden, sea-run cutthroat, and Dungeness crab in Kadake creek and Kadake bay. I’ve hiked (and sometimes struggled) through much of the low-elevation old growth in the Kadake watershed. I’ve had the privilege of watching and photographing the island’s black bears, wolves, bald eagles, waterfowl, river otters, and deer. Several good friends and I fly into the Forest Service cabin in Kadake Bay at least once a year to fish, hunt waterfowl, and hike. On these trips, I spend over \$800.00 on lodging in Petersburg – on chartered float plane flights, fishing licenses, groceries, camping and fishing supplies, and entertainment – all in just two days on either side of our flights to the Kuiu.

I’ve seen first hand the devastation caused by intensive logging outside the Roadless Areas on the north end of the island. Attached to these comments is a Google Earth satellite photograph of the proposed Project Area that shows the pattern of past harvest units pock-marking the northern part of Kuiu. That image, which I witnessed from the air flying into Kadake Bay on a clear day, speaks volumes about the wisdom of additional large-scale logging on the island. Others, including the Tlingit natives of the Village of Kake, can attest more accurately to the value of this area for native Alaskans and the impacts that this legacy of past logging on the island have had on their



## Comment Letter #17 – Steve Mashuda

use of the area.

Mashuda  
2

Despite these impacts, parts of North Kuiu still retain their wild character. Both the Forest Service and the Alaska Department of Fish and Game (ADF&G), have made official what the people of Kake and anyone who's ever hooked a steelhead in Kadake Creek, struggled to find a stream crossing amongst throngs of spawning pink salmon, or feasted on Dungeness crab from Kadake Bay in September, already know – the Kadake watershed is a special place. The Tongass Fish and Wildlife Resource Assessment identified the stream systems for the Saginaw, Security, Rowan, and Kadake watersheds (all affected by the action alternatives) as primary salmon producers. ADF&G designated Kadake Creek in particular as a primary sportfish producer and one of 19 "high value" watersheds in Southeast Alaska. In 1997, the Forest Service recommended 23 miles of Kadake Creek as a recreational river under the Wild and Scenic River Act because of its high historic, recreation, and fisheries values.

Mashuda  
3a

Mashuda  
3b

Mashuda  
3c

Mashuda  
3d

The DEIS does not adequately discuss the potential for significant effects to any of these watersheds and their fisheries from siltation, including the potential for increased sedimentation to destroy productive salmon spawning habitat. Further [logging or road-building, including construction of so-called "temporary" roads, is inconsistent with protecting the recognized cultural, fish and wildlife, and recreational values of these watersheds, especially Kadake Creek.] I urge the Forest Service to [consider an alternative that would exclude this watershed and other sensitive areas from any timber sale units.] While such an alternative could take many forms, [the agency should examine an alternative that includes selective logging from existing road systems by smaller-scale operators.] I understand that this program has been used successfully elsewhere in the Tongass to meet legitimate demand for timber while protecting vital natural resources.

Mashuda  
4

Though the DEIS does not disclose or otherwise analyze this issue, the Ninth Circuit Court of Appeals last year invalidated the Tongass National Forest Plan because, among other things, it contained a fatally flawed economic analysis that "inflated the economic benefits and discounted the environmental impacts of the Plan." See *Natural Resources Defense Council v. U.S. Forest Service*, 421 F.3d 797, 811 (9<sup>th</sup> Cir. 2005). But this proposed sale appears to be based on that same flawed plan. It is an unfortunate, but now well-documented fact, that the Forest Service loses millions of dollars annually on its timber sale program both in Southeast Alaska and on the national level. This sale, with its construction of 19 miles of new roads, is no exception.

Mashuda  
5

At the same time, the Forest Service has proposed to close, sell, or eliminate needed repairs to several recreational cabins in the Tongass because of a budget shortfall of approximately \$300,000.00 in its recreation program. The agency's multiple-use mandate requires the Service to treat recreation and timber production at least on an equal basis. It simply does not make any sense to be proposing to close cabins that provide access and recreational opportunities to the public because of budget shortfalls while simultaneously proposing another timber sale that will lose more money. The Forest Service needs to take a step back and take a comprehensive look at the Tongass Forest Plan with these kinds of discrepancies in mind and fix the Plan before moving ahead with

## Comment Letter #17 – Steve Mashuda

this sale.

Mashuda  
6 { On a related, but contrasting note, it is heartening to see that the Tongass National Forest has proposed, through its recreation master plan, to upgrade the cabin at Kadake Bay. As mentioned earlier, this cabin provides access to some of the best fishing, hunting, and recreational opportunities in Southeast Alaska. These are the kinds of decisions that make sense and ensure long-term economic productivity from the Forest.

Mashuda  
7 { Thank you for the opportunity to comment on this proposed sale. For all of the reasons discussed above, the Forest Service should drop its proposal for this sale. North Kuiu Island is the . Short of that, the EIS process should be suspended at least until the Tongass National Forest Plan is amended or rewritten to comply with the Ninth Circuit's NRDC decision. Only after that can the Forest Service have a chance to produce a Final Environmental Impact Statement that considers the full economic and environmental costs and benefits of this sale along with a broader range of action alternatives and other uses of the forest that protect the unique resources on Kuiu Island.

Sincerely,

/s/

Steve Mashuda

# Response to Mashuda

## **Mashuda - 1**

Preference for Alternative 1, the No-Action Alternative, has been noted.

## **Mashuda - 2**

As noted, parts of North Kuiu Island still retain their wild character and it is the intention of the Kuiu Plan that the area will still retain wild characteristics after implementation of the proposed project.

Most recreational and fish values of the Kadake watershed are concentrated at the mouth of Kadake Creek and within the riparian buffer of the creek itself (TLMP, Vol.2, pp E-251-254). None of the proposed harvest units or temporary roads would be within these areas. The fisheries values of Kadake Creek are not expected to change with the proposed project activities (DEIS p. 3-182).

The activities planned within the Kadake Creek Recreational River Land Use Designation (LUD) are consistent with the expectations for that LUD. Suitable forested land is available for harvest within the Recreational River LUD if the adjacent Land Use Designation allows timber harvest (Forest Plan p. 3-118) as is the case in The Kuiu Timber Sale Area (see Unit Cards Appendix B p. B-83 and B-85). Alternatives 1, 3, and 5 do not propose any harvest within the Recreational River LUD. Alternative 2 proposes 18 acres of partial timber harvest within the ½ mile wide river corridor and Alternative 4 proposes 49 acres of partial harvest. See also Greenpeace Response #41.

## **Mashuda - 3a**

The expected effects of the proposed project include temporary increases in sediment delivery to streams, primarily during road construction (DEIS p. 3-182). However, sediment delivery to streams associated with this project is not expected to significantly degrade fish habitat. The strategy for avoiding significant effects to streams within the Project Area includes the implementation of Forest-wide Standards and Guidelines and Best Management Practices (BMPs) (pp. B-6 – B-10 of the DEIS). Site specific design and mitigation measures for protecting streams are listed on the unit card narratives (DEIS B-16 to B-95) and are incorporated into road construction plans. Action alternatives proposed in this project would increase the amount of open road temporarily, but would ultimately reduce the amount of open road within the Project Area (DEIS Table 3-50, p. 3-129).

The DEIS (p.3-182) acknowledges that there will be an increase in sedimentation from temporary road construction and reconditioning; however, this effect is expected to be short term (clarified in the FEIS as 48 hours after construction). The placement of stream buffers and the implementation of BMPs (DEIS Appendix B pp. B-7 – B -9) is expected to minimize the amount of sediment entering streams. The following statement has been added to the DEIS: Because sedimentation may reduce oxygen levels to developing eggs in spawning gravel and/or trap emerging fry in the gravel construction, timing windows for stream crossings on roads proposed for reconditioning or storage will be implemented (DEIS p. 3-175).

## **Mashuda - 3b**

See Mashuda #2 and Greenpeace Response #41.

## **Mashuda - 3c**

Alternative 1, the No-Action alternative, does not propose any timber harvest or road building within the Kadake watershed. While Alternatives 2-5 do propose timber harvest within the Kadake watershed, Alternatives 3 and 5 do not propose harvest within the ½-mile wide river corridor that is recommended as a Recreational River in the Wild and Scenic River System. The harvest proposed by Alternatives 2 and 4 within the corridor is limited to 18-acres partial harvest in unit 415 and an additional 31 acres partial harvest in Unit 41 in Alternative 4. See also Greenpeace #41.

## **Mashuda - 3d**

The alternatives were developed in response to issues raised during public scoping, and timber sale economics was one of the issues identified. Supplying timber for a small sales program, as exists on other areas of the Tongass National Forest, is a program set up exclusively for the small mills and individuals from the numerous communities located around that area. Kuiu Island does not have the same level of community development as Prince of Wales Island, where the small sale program is located. Without this community structure, it is unlikely minor amounts of down or dead trees from the existing road system would provide economic timber.

The Forest Service is currently planning a timber sale on Kupreanof Island that will consider timber sale opportunities for small-scale operators.

## **Mashuda - 4**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

The Forest Service is not mandated to make money by offering timber for sale. The Timber program is not unusual in costing more to operate than the government receives in revenues from the program. Many programs on the Tongass NF generated no revenue, including the subsistence, heritage, inventory and monitoring, land management planning, geology, fish and wildlife management, trail improvements, and fire protection programs.

## **Mashuda - 5**



## Response to Mashuda

The Multiple-Use Sustained Yield Act of 1960 directs the Forest Service to consider and manage all the resources on the national forests. It also recognizes that some land will be used for less than all of the resources. The Act does not mandate equal spending for each resource on the national forest. The Forest Service is allocated a certain amount of funding for recreation, timber and other resources with specific direction on how to use that money. The amount of money allocated to each resource is beyond the scope of this project.

The Forest Service is undergoing a 5-year evaluation process with its public use cabins, and is decommissioning those that cannot be maintained to standard. One cabin in the Petersburg Ranger District is being decommissioned this year due to lack of funding and lack of demand, and it is a cabin that has been unavailable to the public for over 10 years due to its poor condition.

The Forest Service is directed to sell commercial timber sales at no less than appraised rates. The Kuiu Timber Sale is not a deficit sale.

### **Mashuda - 6**

The Forest Service is glad to have agreement with some of the management decisions.

### **Mashuda - 7**

For the rest of the comments see the response to Mashuda - 4.

# Comment Letter #18 – Chris Zimmer



"chris zimmer"  
<zimmer@alaska.net>

03/20/2006 07:29 PM

To: <Comments-alaska-tongass-petersburg@fs.fed.us>  
cc:  
Subject: Kuiu Timber Sale

Kris Rutledge, Team Leader  
Attn: Kuiu Timber Sale  
USDA Forest Service  
P.O. Box 1328  
Petersburg, AK 99833

Thank you for considering these comments on the proposed Kuiu Timber Sale. The four action alternatives propose logging between 14.6 million board feet (MMBF) of timber from 491 acres and 42.65 MMBF from 1,425 acres from the Kuiu Timber Sale Area on north Kuiu Island. Significant clearcutting will be involved. This sale area includes parts of Rowan Bay (VCU 402) and Kadake Creek (VCU 421), most of the land in Saginaw Bay (VCU 399) and the eastern half of Security Bay (VCU 400). All involve logging in the Kadake Bay watershed.

The Tongass Fish and Wildlife Resource Assessment (ADF&G, 1998) identified the stream systems for the Saginaw, Security, Rowan, and Kadake VCUs as primary salmon producers. ADF&G also identified Kadake Creek as a primary sportfish producer and one of 19 "high value" watersheds in Southeast Alaska. Despite this ranking, and the Forest Service's decision to recommend 23 miles of Kadake Creek as a recreational river under the Wild and Scenic River Act because of its high historic, recreation, and fisheries values in 1997, the action alternatives propose logging in the watershed. There should be no logging or road-building, including temporary roads, in the Kadake watershed.

Kadake is a valuable recreational, cultural and environmental resource. The island has already been heavily logged and clearcut. Additional logging and roading pose unacceptable risks to the watershed and to the people who use and rely on it. I urge you to adopt Alternative 1, the No Action Alternative.

There does not appear to be a pressing economic need for the sale. Last summer's ruling by the 9th Circuit showed that the Tongass Forest Plan significantly inflated estimates of the demand for Tongass timber in order to justify the economics of logging. One reasonable alternative to the four action alternatives described in the DEIS is a timber sale program similar to that developed on Prince of Wales Island. Under that "microsale" program, the Forest Service makes available timber from the existing road system to supply wood specific to small purchaser's operations. The court termed the forest plan "fatally infected" and required a revised plan for the Tongass. Despite the court order, the Forest Service continues to use the discredited plan as the basis for opening up more wild forest land to logging. This flawed plan should be fixed before any more sales are offered.

I applaud the Forest Service's plans to upgrade the public use cabin in Kadake Bay. I have visited the cabin several times. This area offers excellent hunting and fishing and excellent opportunities for solitude and wilderness experiences. However, I am disturbed by plans to close

## Comment Letter #18 – Chris Zimmer

Zimmer  
5 contd.

some cabins in the Tongass or to eliminate needed maintenance due to a \$300,000 budget shortfall. There is documented evidence that the Forest Service's logging program in Southeast Alaska loses millions of dollars every year. The Forest Service should curtail the money-losing timber sales and apply savings to the recreation program. The Forest Service should not be closing cabins when it continues to offer money-losing timber sales.

Sincerely,

Chris Zimmer  
5957 Thane Road  
Juneau, AK 99801

## **Zimmer - 1**

Most cultural, historical, recreational, fish and wildlife values of the Kadake watershed are concentrated at the mouth of Kadake Creek and within the riparian buffer of the creek itself (TLMP FEIS, Appendix, Vol. 2, pp E-251-254). None of the proposed harvest units or roads would be within these areas. See also Mashuda #2 and GSS #41.

## **Zimmer - 2**

Preference for Alternative 1 – The No Action Alternative, is noted.

## **Zimmer - 3**

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tongass Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. The court did not find a willful inflation of market demand to justify logging. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

FAA is currently analyzing market demand. Appendix A has been updated with the information from Brackley et al.

The microsale program on Prince of Wales Island referenced in the comments is a timber sale consisting of dead or down timber, which has been proposed by a prospective purchaser, that the District Ranger agrees to offer for bidding using an informal advertisement and short Bid Form. The maximum size of a microsale is 50 MBF and \$10,000 advertised value. District Rangers review each proposed microsale that is greater than 25 MBF for its potential as a regular small sale.

Kuiu Island does not have the same level of community development as Prince of Wales Island. Without this community structure, it is unlikely the same demand will exist for minor amounts of down or dead trees from the existing road system.

## **Zimmer - 4**

The court listed its findings in *Natural Resources Defense Council v. U.S. Forest Service* but did not require the Forest to revise the plan. In response to the court's decision the Tongass chose to amend the Forest Plan. Until the revision is completed, projects will move forward, with the Forest Plan continuing to be the guiding document and contract with the public.

The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA), which modified the Alaska National Interest Lands Conservation Act (ANILCA). This states that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle."



## Response to Zimmer

As described more fully in Appendix A of the FEIS, to provide a steady flow of timber harvest volume, timber sale projects need to be completed through the NEPA process each year to meet current and future market demand.

### **Zimmer - 5**

The Forest Service is undergoing a 5-year evaluation process with its public use cabins, and is decommissioning those that cannot be maintained to standard. One cabin in the Petersburg Ranger District is being decommissioned this year due to lack of funding and lack of demand, and it is a cabin that has been unavailable to the public for over 10 years due to its condition

The Forest Service is not mandated to make money by offering timber for sale. The Timber program is not unusual in costing more to operate than the government receives in revenues from the program. Many programs on the Tongass NF generated no revenue, including the subsistence, heritage, inventory and monitoring, land management planning, geology, fish and wildlife management, trail improvements, and fire protection programs.

# Comment Letter #19 – NRDC form letter

February 20-March 20, 2006

Kris Rutledge, Team Leader  
Attn: Kuiu Timber Sale  
USDA Forest Service  
P.O. Box 1328  
Petersburg, AK 99833

Subject: Kuiu timber sale

Dear Team Leader Rutledge,

NRDC - 1

I oppose any new roads or logging in the Security or North Kuiu roadless areas of the Tongass National Forest, and I urge the Forest Service to withdraw its proposal for the Kuiu timber sale. The surrounding region has already been logged extensively, and more clearcuts would remove the best of the remaining forest and could forever change the habitat of what may be the highest densities of black bears anywhere in North America. This incredible wild area is virtually the last unlogged and road-free fish and wildlife habitat in this portion of Kuiu Island, supporting Sitka black-tailed deer, moose, marten, wolves and salmon.

NRDC - 2

NRDC - 3

In addition to permanently obliterating wild roadless areas, any logging project would likely increase taxpayer subsidies, threaten important native ancestral grounds and endanger local industries such as commercial fishing, tourism and hunting. Again, I urge you to withdraw your proposal to log roadless areas in the Kuiu timber sale.

Sincerely,

Sample  
form  
letter

# Response to NRDC form letter

## **NRDC - 1**

Opposition to new road building and logging on Kuiu Island has been noted.

## **NRDC - 2**

Concern over the acres of clearcuts on Kuiu Island is noted. The 27,856 acres of harvest referred to are located on an island that is 482,101 acres, 64 percent of which is in non-management LUDS (Kuiu Island Landscape Assessment). Less than six percent of the island has been harvested and less than five percent of the major watersheds have any harvest in them. In addition there is a forest-wide system of protection provided by other non-development LUDs (282,558 acres on Kuiu Island) that maintain the integrity of the forest-wide ecosystem and provide future options for maintaining naturally occurring ecosystems.

The Project Area is mostly roaded. The use of the existing road system was one of the reasons this area was chosen.

## **NRDC - 3**

See response GSS-12

March 2 -March 15, 2006

Kris Rutledge, Team Leader  
Attn: Kuiu Timber Sale, USDA Forest Service  
P.O. Box 1328  
Petersburg, AK 99833

Subject: Kuiu timber sale

Dear Team Leader Rutledge,

I urge you to cancel the proposed Kuiu Timber Sale immediately.

Please halt all sale preparations and cease any further plans to log or build roads on North Kuiu Island.

North Kuiu Island is already heavily logged and roaded. Clearcutting and building more roads within remnant wildlife habitat will bring further, and irreparable, harm to the cultural traditions of the local Tlingit people. It is not in the best interests of our nation.

You are logging America's rainforest under a deeply flawed forest plan that is costing taxpayers millions of dollars. Please end those losses now.

Sincerely,

# Sample Form Letter



# Response to WS form letter

## WS - 1

The request to cancel the proposed Kuiu timber sale has been noted.

In August 2005, the Ninth Circuit held that the environmental impact statement and record of decision for the Tonga's Forest Plan adopted in 1997 had errors relating to the use of projected market demand for timber, the range of alternatives considered, and the cumulative effects of activities on non-National Forest System lands. In response to the Court ruling, the Forest Plan is currently being amended through an environmental impact statement. The DEIS for the amendment was released for public comment in January 2007.

The past harvest and road construction referred to is located on an island 482,101 acres in size of which 64 percent is in non-management LUDs (Kuiu Island Landscape Assessment). Less than six percent of the island has been harvested and less than five percent of the major watersheds include any harvest.

On p. 3-26 of the DEIS it states, "The Forest Plan contains a comprehensive conservation strategy to assure viable and well-distributed wildlife populations (Forest Plan FEIS Appendix, Volume 4, Appendix N, 1997)." The DEIS goes on to explain much of this strategy. While there is expected to be some effects from the proposed actions of each alternative, the cumulative effects listed on pp. 3-72 thru 3-74 do not identify any threats to the viability to any species from the proposed timber harvest activities.

The Conservation Strategy Review Workshop was conducted April 10-14, 2006 at the Ted Ferry Civic Center in Ketchikan Alaska. Key Findings from the workshop are listed below:

- The Conservation Strategy is still sound.
- There is a low risk of species viability problems related to Forest Plan implementation.
- Endemic species continue to be a high priority information need.
- There is good opportunity to manage habitats to emphasize production of prey species of other foods.
- Management of young-growth forests for wildlife habitat is promising, especially for species like black-tailed deer.
- There is a need to better understand the role and management of the Matrix part of the Strategy, including the role of non-National Forest System lands.
- The wildlife monitoring program needs to be updated.

The historic and current use of Kuiu Island for subsistence deer hunting has been updated in the FEIS (see Response to OVK 2a). Analyses for heritage resources, subsistence, and socioeconomics can be found in Chapter 3.

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